



**PATENT APPLICATION**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Shingo SUZUKI et al.

Application No.: 09/769,295

Filed: January 26, 2001

For: SPREAD ILLUMINATING APPARATUS

Mail Stop: Reconstruction

Group Art Unit: 2875

Examiner: H. Sawhney

Docket No.: 108467

**SUBMISSION IN RESPONSE TO NOTICE UNDER 37 C.F.R. §1.251-PATENT**

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Sir:

In reply to the March 25, 2004 Notice under 37 C.F.R. §1.251-Patent, Applicants respectfully submit herewith a copy of Applicants' file in the above-identified application, including copies of:


1. Application, Application Transmittal, Inventor Data Sheet, Preliminary Amendment, Declaration and Power of Attorney, Assignment Transmittal and Assignment filed on January 26, 2001;
2. Notice of Recordation of Assignment mailed April 19, 2001 from the Patent Office;
3. Claim for Priority with cover page of certified copy of priority document, Letter to the Official Draftsperson, Information Disclosure Statement with PTO Form-1449 filed on April 26, 2001;
4. Official Filing Receipt mailed on May 22, 2001 from the Patent Office;
5. Request for Correction of PALM Records with marked-up Official Filing Receipt, filed on June 15, 2001;

6. Corrected Filing Receipt mailed August 20, 2001 from the Patent Office;
7. Notice of Publication of Application mailed September 7, 2001 from the Patent Office;
8. Office Action with initialed Form PTO-1449 and Notice of References Cited (PTO-892) mailed on May 17, 2002 from the Patent Office;
9. Amendment and Petition for Extension of Time filed on September 9, 2002;
10. Office Action and Notice of References Cited (PTO-892) mailed on November 13, 2002 from the Patent Office;
11. Amendment After Final Rejection filed on February 10, 2003;
12. Office Action with Notice of References Cited (PTO-892) mailed on February 28, 2003 from the Patent Office;
13. Amendment After Final Rejection and Petition for Extension of Time filed on June 9, 2003;
14. Request for Refund to Deposit Account (with July 2003 Deposit Account Statement and cancelled Check No. 142895) filed on July 24, 2003;
15. Notice of Allowance and Fee(s) Due mailed July 28, 2003 from the Patent Office;
16. Fee Transmittal submitted on September 30, 2003;
17. Issue Notification mailed from the Patent Office (received by Applicants on November 17, 2003);
18. Letters Patent issued on December 2, 2003; and
19. Notice Under 37 C.F.R. §1.251-Patent mailed from the Patent Office on March 25, 2004.

The above listed copies submitted with this reply constitute a complete and accurate copy of Applicants' record of all the correspondence between the Patent Office and the Applicants for the above-identified application (except for copies of U.S. Patent documents)

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Respectfully submitted,



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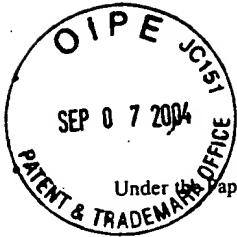
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In re Patent No.:

6,555,809 B2

Patentee:

Shingo SUZUKI et al.

Patent Date:

December 2, 2003

Application No.:

09/769,295

Filing Date:

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**NOTICE UNDER 37 CFR 1.251 - Patent**

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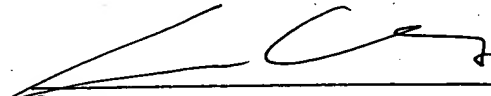
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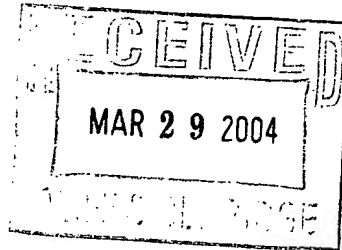
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EXAMINER

SAWHNEY, HARGOBIND S

ART UNIT PAPER NUMBER

2875

DATE MAILED: 03/25/2004

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*Has received an application for a patent for a new and useful invention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.*

*Therefore, this*

### United States Patent

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(12) **United States Patent**  
Suzuki et al.

(10) Patent No.: **US 6,655,809 B2**  
(45) Date of Patent: **Dec. 2, 2003**

(54) **SPREAD ILLUMINATING APPARATUS**

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(73) Assignee: Minebea, Co., Ltd., Kitasaku-gun (JP)

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: 09/769,295

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(51) Int. Cl.<sup>7</sup> ..... F21V 7/04

(52) U.S. Cl. .... 362/31; 362/551; 362/26;  
362/331

(58) Field of Search ..... 362/31, 26, 551,  
362/556, 331

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(57) **ABSTRACT**

There is provided a spread illuminating apparatus which is improved in terms of compactness. A light guiding member (15) provided with a curve (20) is disposed between an end (5a) of a light conductive member (5) and a spot-like light source (6). Light beams from the spot-like light source (6) which travel in the direction orthogonal to an electric wiring board (17) are directed toward the end (5a) of the light conductive member (5) (in the direction parallel with the electric wiring board (17)) to be properly guided while reflected at the curve (20). Since the light beams from the spot-like light source (6) are properly guided, the light beams from the spot-like light source (6) can enter the light conductive member (5) with the spot-like light source (6) and the light conductive member (5) not disposed on the same plane. Therefore, the spot-like light source (6) can be arranged with less restrictions, thereby enabling the spot-like light source (6) to be disposed on the electric wiring board (17) together with other electronic components. Accordingly, in comparison with the conventional art in which the spot-like light source can not be disposed on the electric wiring board together with other electronic components requiring separate circuits to be provided, the apparatus can be improved in terms of compactness.

**3 Claims, 7 Drawing Sheets**

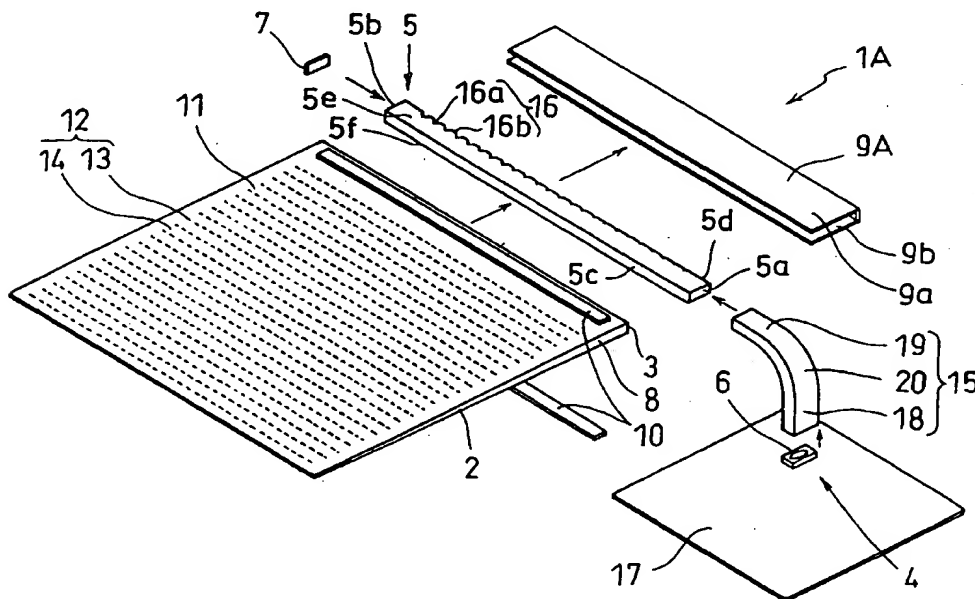




FIG. 2

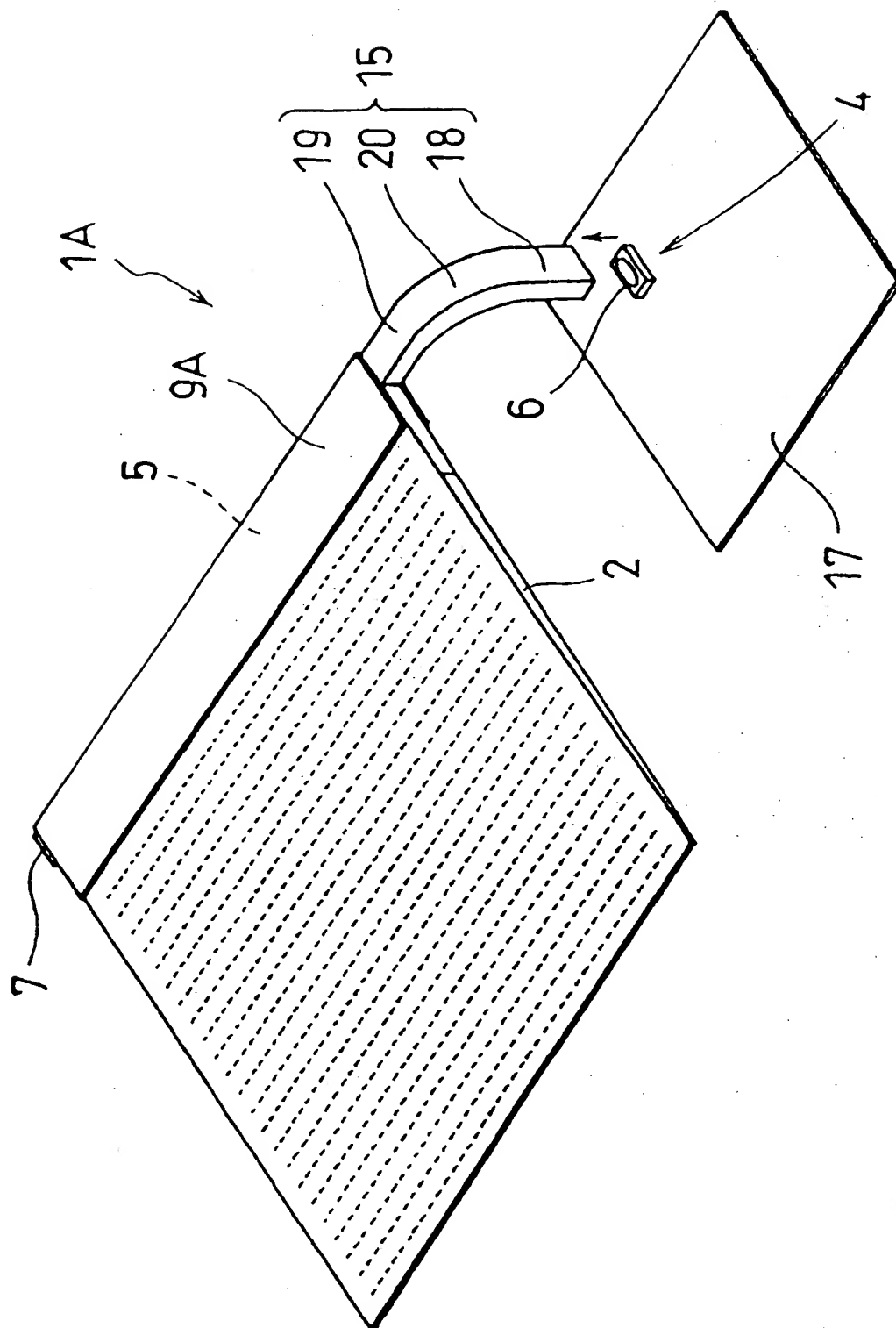


FIG. 3

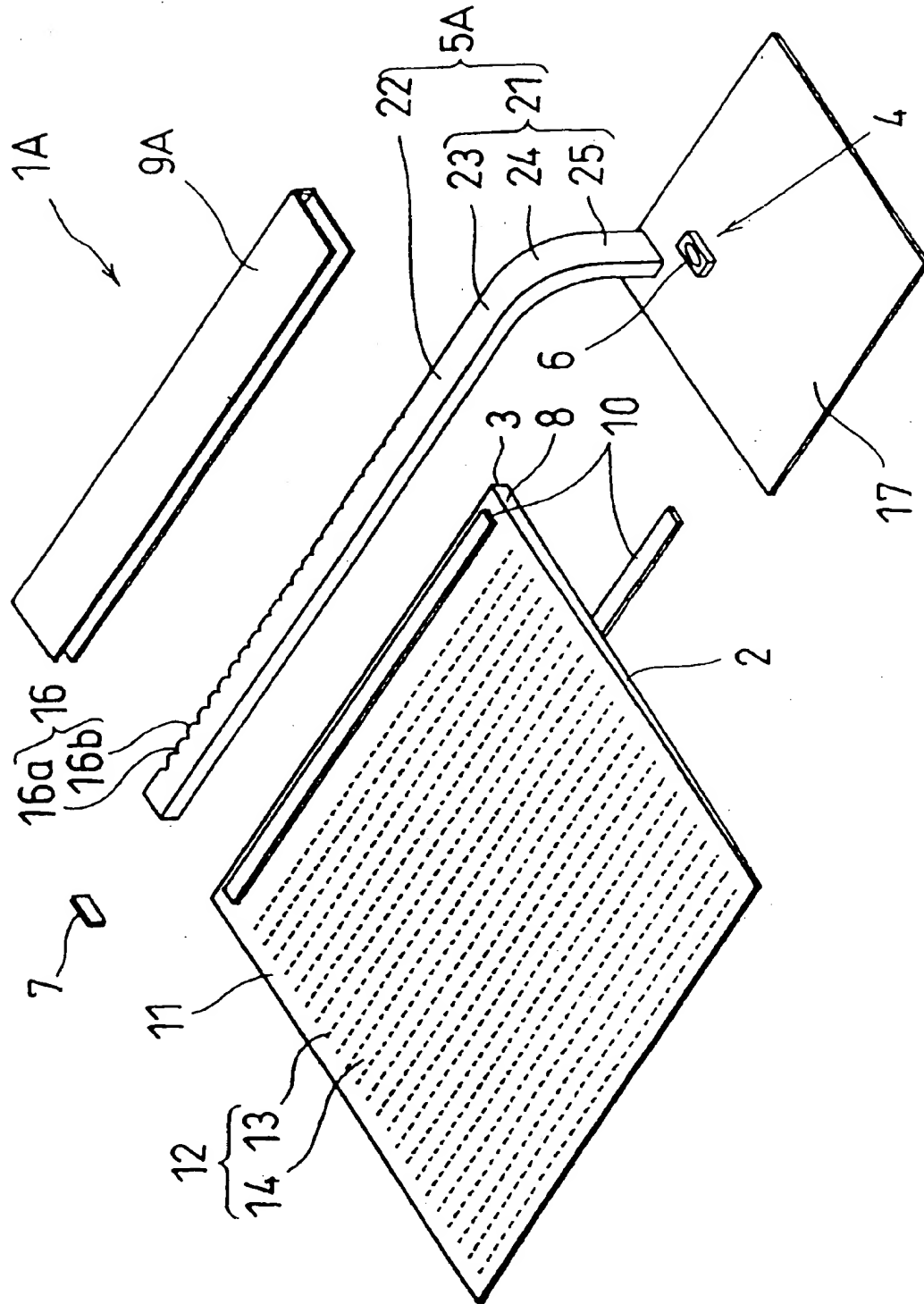
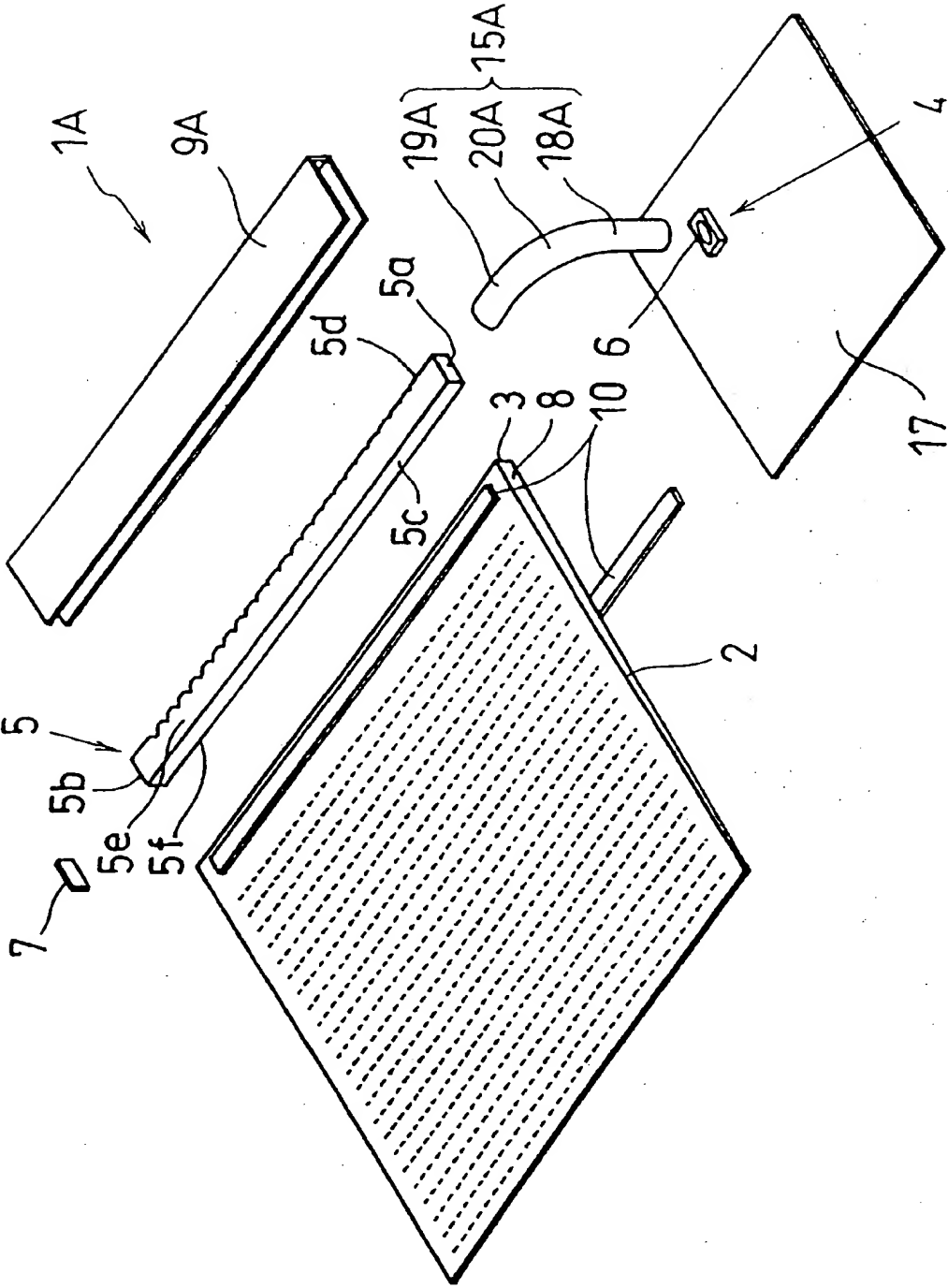
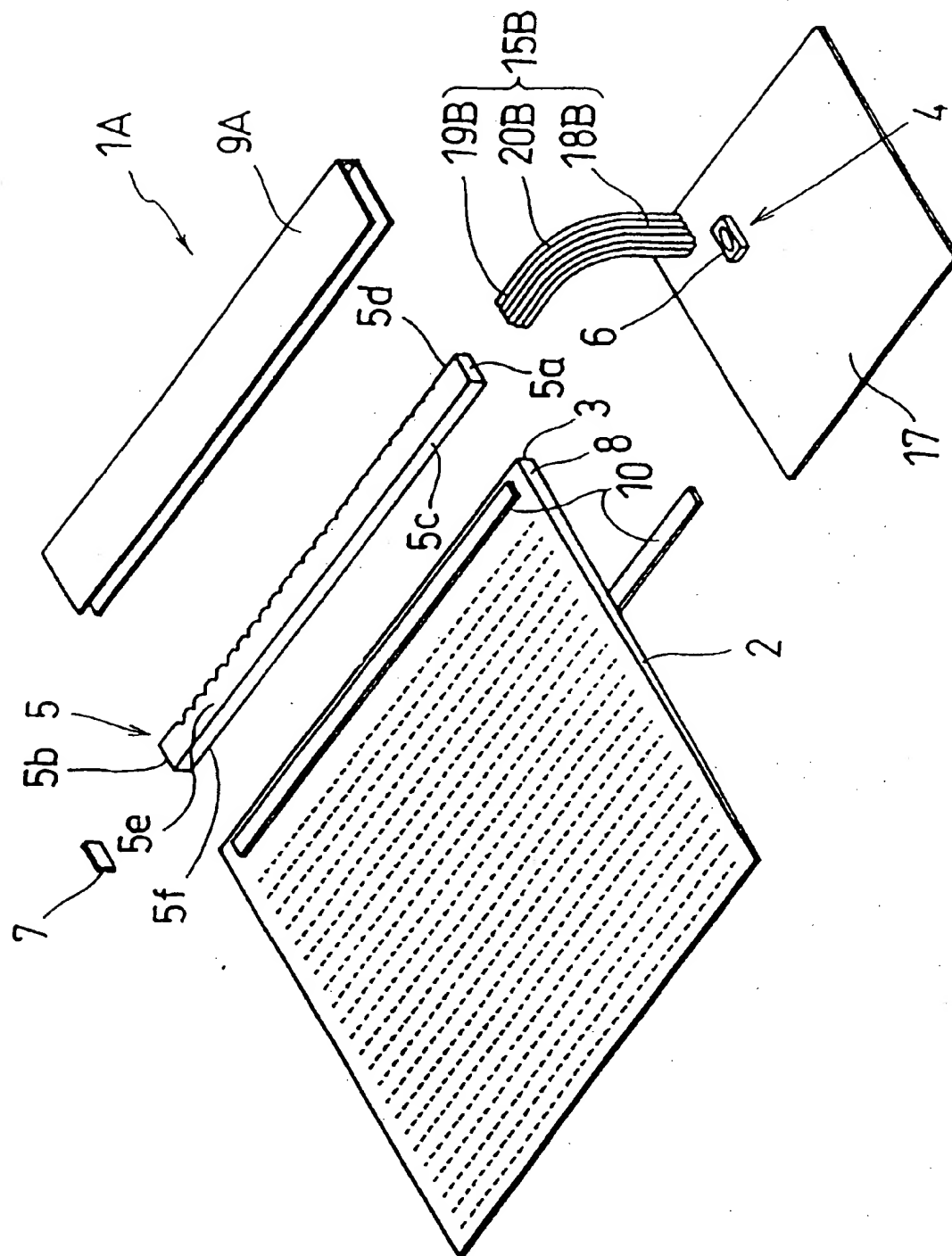


FIG. 4



516.5





# FIG. 6 (Prior Art)

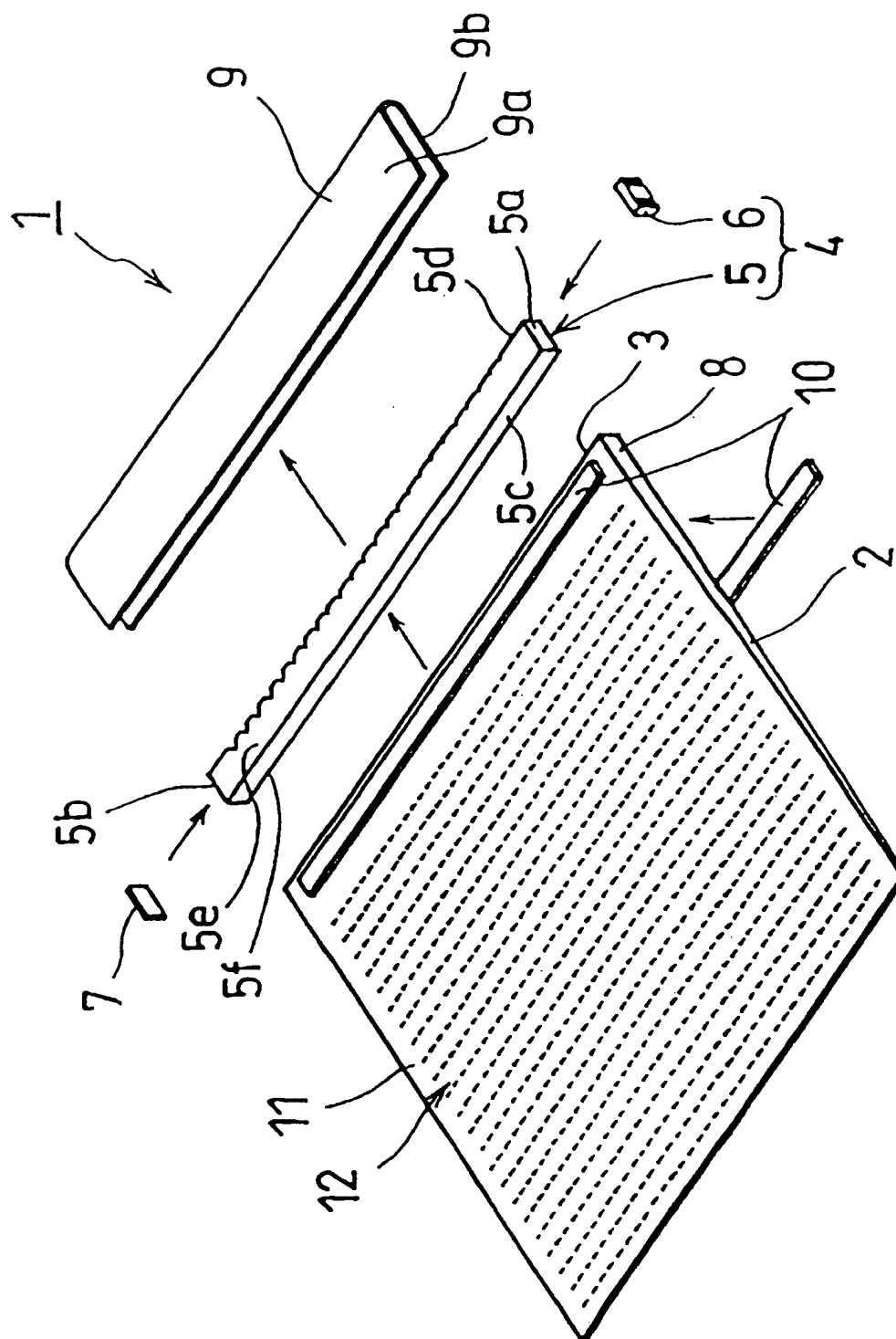
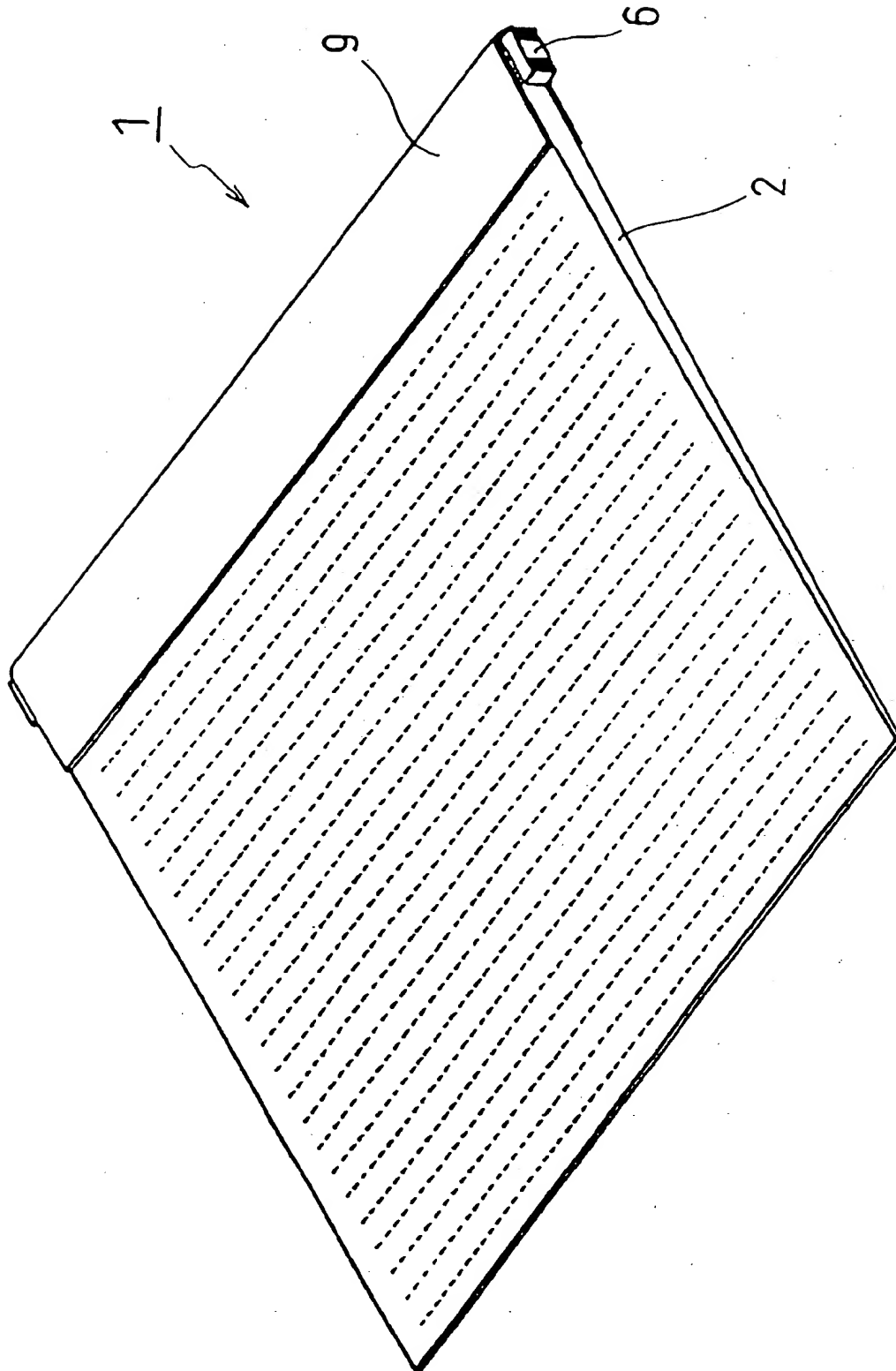


FIG. 7 (Prior Art)



## SPREAD ILLUMINATING APPARATUS

## BACKGROUND OF THE INVENTION

## 1. Field of the Invention

The present invention relates to a spread illuminating apparatus used as an illuminating means for signboards, various kinds of reflection-type displays, etc., and more particularly to a spread illuminating apparatus used as an illuminating means for a liquid crystal display.

## 2. Description of the Related Art

A demand for a liquid crystal display as a display mainly for computers has been increased since the liquid crystal display which operates on low power consumption is characterized by being thin and light weighted and so on. Since a liquid crystal which is a component member of the liquid crystal display does not emit light by itself, an illuminating means for viewing an image is required unlike a light emitting element such as a picture tube. In particular, in the recent demand for thinner devices, there has been a growing tendency to employ a spread illuminating apparatus of a side light type (light conductive member type) that is thin plate-like as an illuminating means for illuminating the liquid crystal display.

An example of such a side light type spread illuminating apparatus is shown in FIGS. 6 and 7.

In FIGS. 6 and 7, a spread illuminating apparatus 1 is, in general, constituted such that a bar-like light source 4 is disposed close to an end surface 3 of a transparent substrate 2 formed of a light-transmissible material. The transparent substrate 2 is formed in a wedge-shape, in which the thickness is in inverse proportion to the increase in the distance from the end surface 3 and gradually decreases.

The light source 4 is, in general, composed of a light conductive member 5 and a spot-like light source 6. The light conductive member 5 is made of a transparent material, formed in a long plate and disposed close to and along the end surface 3 of the transparent substrate 2, and the spot-like light source 6 is composed of an LED disposed facing one end 5a of the light conductive member 5. A reflection plate 7 is disposed facing the other end 5b of the light conductive member 5.

Further, a light reflection member 9, which is U-shaped, is disposed in such a manner as to cover longitudinal peripheral surfaces of the light conductive member 5 except a surface 5c (first surface of the light conductive member) facing the transparent substrate 2 [covered are a surface 5d (second surface of the light conductive member) opposite to the first surface 5c of light conductive member and two surfaces extending in the longitudinal direction and being orthogonal to and continuous with the second surface 5d of the light conductive member (one on the upper side in FIG. 6 is referred to as third surface 5e of the light conductive member and one on the lower side in FIG. 6 is referred to as fourth surface 5f of the light conductive member)] and a portion 8 (transparent substrate proximal portion) positioned toward the end surface 3 of the transparent substrate 2.

A double-faced adhesive tape 10 is placed between the transparent substrate proximal portion 8 and opposing plates 9a and 9b of the light reflection member 9, which oppose each other, so that the light reflection member 9 is fixed to the transparent substrate proximal portion 8.

A light reflection pattern 12 is formed on a surface 11 of the transparent substrate 2 (the upper side in FIG. 6, hereinafter referred to as upper surface), and thus the brightness

is almost uniform everywhere on the transparent substrate 2 irrespective of the distance from the light conductive member 5.

In the spread illuminating apparatus, it is desired that the spot-like light source be disposed on an electric wiring board (not shown) together with other electronic components in order to make the apparatus compact.

However, according to the conventional art described with reference to FIGS. 6 and 7, a reflection-type liquid crystal display element or the like are disposed under the spread illuminating apparatus, so there necessarily exists a distance equal to the thickness of the liquid crystal display element or the like between the spread illuminating apparatus and the electric wiring board. Therefore, it is difficult to dispose the spot-like light source 6 composed of an LED on the electric wiring board (not shown) together with other electronic components (electronic components used for electronic equipment provided with the liquid crystal display element, not shown). Thus, separate wiring paths have to be provided. In the above-described conventional art, since the separate wiring paths are provided, the circuit structure is complicated, which hinders the apparatus from becoming compact.

## SUMMARY OF THE INVENTION

The present invention has been made in view of the above, and an object of the present invention is therefore to provide a spread illuminating apparatus which is improved in terms of compactness.

According to a first aspect of the present invention, there is provided a spread illuminating apparatus having a bar-like light source disposed along and in the vicinity of an end surface of a transparent substrate made of a transparent material, characterized in that the light source is composed of a light conductive member which is made of a transparent material, formed bar-like and disposed close to and along at least one end surface of the transparent substrate, and a spot-like light source which is disposed at at least one end of the light conductive member, and that a light guiding member which can change the direction of light beams is provided between the end of the light conductive member and the spot-like light source.

According to a second aspect of the present invention, in the spread illuminating apparatus of the first aspect of the present invention, the light guiding member is formed integrally with the light conductive member 5.

According to a third aspect of the present invention, in the spread illuminating apparatus of the first aspect of the present invention, the light guiding member is formed separately from the light conductive member.

According to a fourth aspect of the present invention, in the spread illuminating apparatus of the third aspect of the present invention, the light guiding member is comprised of at least one optical fiber.

According to a fifth aspect of the present invention, in the spread illuminating apparatus of any one of the first to third aspects of the present invention, the light guiding member is provided with a means for increasing reflection which improves light reflectance.

## BRIEF DESCRIPTION OF THE DRAWINGS

In the accompanying drawings:

FIG. 1 is an exploded perspective view showing a spread illuminating apparatus according to a first embodiment of the present invention;

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FIG. 2 is a perspective view showing the spread illuminating apparatus of FIG. 1 in its assembled state;

FIG. 3 is an exploded perspective view showing a spread illuminating apparatus according to a second embodiment of the present invention;

FIG. 4 is an exploded perspective view showing a spread illuminating apparatus according to a third embodiment of the present invention;

FIG. 5 is an exploded perspective view showing a spread illuminating apparatus according to a fourth embodiment of the present invention;

FIG. 6 is an exploded perspective view showing an example of a conventional spread illuminating apparatus; and

FIG. 7 is a perspective view showing the spread illuminating apparatus of FIG. 6 in its assembled state.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

A spread illuminating apparatus 1A according to a first embodiment of the present invention will be described with reference to FIGS. 1 and 2. Note that parts and components identical with those in FIGS. 6 and 7 are designated by the same reference symbols and the description thereof is appropriately omitted.

The spread illuminating apparatus 1A is in general composed such that a bar-like light source 4 is disposed close to an end surface 3 (light incident surface) of a transparent substrate 2 made of a transparent material. For instance, it is disposed in such a manner as to cover a screen of a reflection-type liquid crystal display element (not shown), and is used as an auxiliary illuminating apparatus therefor.

The transparent substrate 2 is formed in a wedge-shape, in which the thickness is inversely proportional to the increase in distance from the end surface 3 and gradually decreases.

A light reflection pattern 12 is formed on a surface 11 of the transparent substrate 2 (the upper side in FIG. 1, hereinafter referred to as upper surface). The light reflection pattern 12 is composed of a number of grooves 13 each of which has a substantially triangular shape in section, and flat portions 14 each of which is formed between two adjacent grooves 13. Thus, the light reflection pattern 12 is arranged such that the brightness is almost uniform everywhere on the transparent substrate 2 irrespective of the distance from the light conductive member 5, and that the ratio of the width (occupied area) of the groove 13 to the width (occupied area) of the flat portion 14 increases in proportion to the increase in distance from the end surface 3.

The grooves 13 of the light reflection pattern 12 formed on the transparent substrate 2 are so fine that the grooves 13 do not make an obstruction to viewing screen.

The light source 4 is in general composed of the light conductive member 5 made of a transparent material, formed bar-like and disposed close to the end surface 3 of the transparent substrate 2, a spot-like light source 6 made of an LED disposed facing one end 5a of the light conductive member 5 and a light guiding member 15 to be described later. A reflection plate 7 is disposed facing the other end 5b of the light conductive member 5.

An optical path conversion means 16 is provided on a second surface 5d of the light conductive member 5. The optical path conversion means 16 is composed of grooves 16a each of which is substantially triangular in section, and flat portions 16b each of which is formed between any two grooves 16a adjacent to each other.

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Light beams which travel inside the light conductive member 5 and are reflected at the second surface 5d of the light conductive member have a tendency, when reflected at the grooves 16a, to travel substantially perpendicular to a first surface 5c of the light conductive member due to inclined surfaces (not shown) constituting the grooves 16a, and a larger amount of light penetrates the first surface 5c of the light conductive member and resultingly travels into the transparent substrate 2 compared with the case where the light beams are reflected at the flat portions 16b. Accordingly, the ratio of the width (occupied area) of the groove 16a to the width (occupied area) of the flat portion 16b is set to gradually increase in proportion to the increase in distance from the end 5a of the light conductive member 5. At this point, the optical path conversion means 16 is formed in consideration of a relational balance between the distance from the spot-like light source 6 and the occupied area of the groove portion 16a, whereby the light beams are uniformly emitted from the first surface 5c of the light conductive member although the spot-like light source 6 is disposed at the end 5a.

In order to specifically vary the ratio of the occupied area of the groove 16a to the occupied area of the flat portion 16b as described above, the optical path conversion means 16 in this embodiment is set such that the interval (pitch) between any two grooves 16a adjacent to each other is kept constant while the depth of the groove 16a gradually increases in proportion to the increase in distance from the spot-like light source 6. Note that, although not shown in the figure, the optical path conversion means 16 may be set such that the depth of the groove 16a is kept constant while the interval (pitch) between two grooves 16a adjacent to each other gradually decreases to thereby vary the ratio of the occupied area of the groove portion 16a to the occupied area of the flat portion 16b.

Further, a light reflection member 9A, which is substantially U-shaped, is disposed in such a manner as to cover longitudinal peripheral surfaces of the light conductive member 5 except a surface 5c (first surface of the light conductive member) facing the transparent substrate 2 [covered are a surface 5d opposite to first surface 5c of the light conductive member (second surface of the light conductive member) and two surfaces extending in the longitudinal direction and being orthogonal to and continuous with the second surface 5d of the light conductive member (one on the upper side in FIG. 1 is third surface 5e of the light conductive member and one on the lower side in FIG. 1 is fourth surface 5f of the light conductive member)] and a portion 8 (transparent substrate proximal portion) positioned toward the end surface 3 of the transparent substrate 2.

A double-faced adhesive tape 10 is placed between the transparent substrate proximal portion 8 and opposing plates 9a and 9b of the light reflection member 9A, which oppose each other, so that the light reflection member 9A is fixed to the transparent substrate proximal portion 8.

The spot-like light source 6 composed of an LED is disposed on an electric wiring board 17 together with electronic components not shown in the figure. In this embodiment, the electric wiring board 17 is disposed parallel with the light conductive member 5. A light guiding member 15 is provided between the end 5a of the light conductive member 5 and the spot-like light source 6.

The light guiding member 15 is in general composed of a rectangular plate-like wing 18 provided facing the spot-like light source 6, a rectangular plate-like wing 19 provided

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facing the light conductive member 5 and a curve 20 connecting the wing 18 and the wing 19. The wing 18 and the wing 19 are connected with each other through the curve 20 in such a manner as to form a predetermined angle (obtuse angle in this embodiment). The end surface of the wing 18 faces the spot-like light source 6 and the end surface of the wing 19 faces the end 5a of the light conductive member 5. In this state, the wing 18 is substantially orthogonal to the electric wiring board 17, and the wing 19 is oriented as extending from the light conductive member 5 (in parallel with the electric wiring board 17).

The light guiding member 15 is structured such that the wing 18 and the wing 19 are connected to the curve 20, respectively, to make a predetermined angle so that light beams which travel from the spot-like light source 6 toward the upper side in FIG. 1 (in the direction orthogonal to the electric wiring board 17) are directed toward the end 5a of the light conductive member 5 (in the direction parallel with the electric wiring board 17) due to reflection at the curve 20.

In the spread illuminating apparatus 1A structured as described above, the light beams, which are emitted from the spot-like light source 6 and travel in the direction orthogonal to the electric wiring board 17, are reflected at the curve 20 and emitted from the wing 19 in such a manner as to travel in parallel with the electric wiring board 17, and then enter the light conductive member 5.

As described above, the light guiding member 15 is provided between the end 5a of the light conductive member 5 and the spot-like light source 6 to thereby convert the direction of the light beams from the spot-like light source 6. Thus the light beams from the spot-like light source 6 enter the light conductive member 5 with the spot-like light source 6 not disposed on the same plane as the light conductive member 5. Therefore, the spot-like light source 6 is subject to less restrictions in arrangement, enabling the spot-like light source 6 and other electronic components (not shown) to be disposed on the same electric wiring board 17.

In the conventional art shown in FIGS. 6 and 7, it is difficult to dispose the spot-like light source 6 on an electric wiring board together with other electronic components (not shown), and separate wiring paths have to be provided making the circuit structure complicated. On the other hand, according to this embodiment, the spot-like light source 6 and other electronic components (not shown) may be disposed together on the same electric circuit board 17, whereby the separate wiring paths, which have had to be provided in the conventional art, are no longer required and the apparatus can be made compact.

Further, in the first embodiment (FIG. 1 and FIG. 2), the light guiding member 15 and the light conductive member 5 are separately formed. So, the variation of the position of the electric wiring board 17 can be accommodated by modifying only the shape of the light guiding member 15 with the shape of the light conductive member 5 kept intact. Therefore, the light conductive member 5 can be standardized and the productivity can be improved.

In the first embodiment (FIG. 1 and FIG. 2) described above, the light guiding member 15 and the light conductive member 5 are separately formed. Alternatively, a light guiding member 21 corresponding to the light guiding member 15 may be integrally formed with a light conductive member 5A as shown in FIG. 3 (hereinafter referred to as second embodiment).

The second embodiment is different from the first embodiment mainly in that the light conductive member 5A including the light guiding member 21 is provided in place of the light conductive member 5 and the light guiding member 15.

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The light conductive member 5A is composed of a light conductive member proper 22 corresponding to the light conductive member 5 in the first embodiment and the light guiding member 21 connected with the light conductive member proper 22. The light guiding member 21 is in general composed of an extension 23 corresponding to the wing 19, a curve 24 corresponding to the curve 20 and a wing 25 corresponding to the wing 18 in the first embodiment, respectively. An end surface of the wing 25 faces the spot-like light source 6, where the wing 25 is made approximately normal to the electric wiring board 17.

The light conductive member 5A is structured such that the extension 23 which extends from the light conductive member proper 22 and the wing 25 are connected with the curve 24, respectively, to make a predetermined angle so that light beams which travel from the spot-like light source 6 toward the upper side in FIG. 3 (in the direction orthogonal to the electric wiring board 17) are reflected at the curve 24 and guided toward the light conductive member proper 22 (in the direction parallel with the electric wiring board 17).

In the spread illuminating apparatus 1A structured as described above, the light beams, which are emitted from the spot-like light source 6 and travel in the direction orthogonal to the electric wiring board 17, are reflected at the curve 24 and emitted from the extension 23 in such a manner as to travel in parallel with the electric wiring board 17, then enter the light conductive member proper 22.

As described above, since the light guiding member 21 is provided to be located between the light conductive member proper 22 and the spot-like light source 6, that is, at a portion toward the spot-like light source 6 in the light conductive member 5A, and guides the light beams from the spot-like light source 6 into the light conductive member proper 22 with the spot-like light source 6 not disposed on the same plane as the light conductive member proper 22, the spot-like light source 6 is subject to reduced restrictions in arrangement, thereby enabling the spot-like light source 6 and other electronic components (not shown) to be disposed together on the electric wiring board 17.

In the second embodiment also, the circuit structure can be simplified as in the first embodiment. Therefore, the apparatus can be made further compact in comparison with the conventional art described above with reference to FIGS. 6 and 7.

Also, in the second embodiment, the light conductive member 5A is provided with the light guiding member 21, so that not only the number of components but also the number of processes in assembling are reduced in comparison with the first embodiment in which the light guiding member 15 and the light conductive member 5 are separately formed. Thus, the productivity can be improved.

In the above-described first and second embodiments, a layer or a film for increasing reflection (means for increasing reflection, not shown) which improves light reflectance may be coated on or applied to the curve 20 of the light guiding member 15 or the curve 24 of the light guiding member 21, whereby the light beams from the light source can be guided satisfactorily toward the exit side thereby increasing the efficiency of using the light from the spot-like light source 6.

In addition, as shown in FIG. 4, a light guiding member 15A made of an optical fiber having a large diameter may be used instead of the light guiding member 15 in the first embodiment (hereinafter referred to as third embodiment). Alternatively, a light guiding member 15B made of a plurality of optical fibers each of which has a small diameter and which are tied up in a bundle may be used as shown in FIG. 5 (hereinafter referred to as fourth embodiment).

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The light guiding member 15A is in general composed of a bar-like wing 18A provided facing the spot-like light source 6, a bar-like wing 19A provided facing the light conductive member 5 and a curve 20A connecting the wing 18A and the wing 19A as shown in FIG. 4. The light guiding member 15B which is made of a plurality of optical fibers tied up in a bundle is in general composed of a bar-like wing 18B provided facing the spot-like light source 6, a bar-like wing 19B provided facing the light conductive member 5 and a curve 20B connecting the wing 18B and the wing 19B as shown in FIG. 5.

In the third and fourth embodiments, as well as in the first embodiment, the light guiding members 15A and 15B are provided to guide the light beams from the spot-like light source 6. Accordingly, the spot-like light source 6 does not have to be disposed on the same plane as the light conductive member 5 and still the light beams from the spot-like light source 6 can enter the light conductive member 5. Therefore, the spot-like light source 6 can be disposed with reduced restrictions, thereby enabling the spot-like light source 6 and other electronic components (not shown) to be disposed together on the same electric wiring board 17. Accordingly, the circuit structure can be simplified, and thus the apparatus can be made compact in comparison with the above-described conventional art (FIGS. 6 and 7) in which separate wiring paths need to be provided.

According to the third and fourth embodiments of the present invention, the light guiding members 15A and 15B are made of optical fibers which are readily bent, and therefore are easy to manufacture. Thus, the productivity can be improved.

Further, in each of the above-described embodiments, one spot-like light source (spot-like light source 6) is used. However, the present invention is not limited thereto. For example, in addition to the spot-like light source 6 provided facing the end 5a of the light conductive member 5, a spot-like light source (not shown) may be disposed in place of the reflection plate 7 provided facing the other end 5b of the light conductive member 5 so as to provide a plurality of spot-like light sources.

Furthermore, in the embodiments of the present invention, the transparent substrate 2 is formed in a wedge-shape, in which the thickness is in inverse proportion to the increase in distance from the end surface 3 and gradually decreases. This construction is desirable for making the apparatus thinner and lighter in weight. Alternatively, the transparent substrate 2 may be constituted to have a uniform thickness.

According to the first aspect of the present invention, the light guiding member is provided between the end of the light conductive member and the spot-like light source to thereby guide light beams from the spot-like light source, so the light beams from the spot-like light source is adapted to enter the light conductive member even if the spot-like light source is not disposed on the same plane as the light conductive member. Therefore, the spot-like light source can be arranged with less restrictions, thereby enabling the spot-like light source to be disposed on an electric wiring board together with other electronic components. In the conventional art, it is difficult to dispose the spot-like light source on the electric wiring board together with other electronic components, and separate wiring paths have to be provided making the circuit structure complicated. On the other hand, according to the present invention, the spot-like light source and other electronic components may be disposed together on the same electric wiring board as described above, whereby the separate wiring paths, which have had to be provided in the conventional art, are no longer required. Thus the apparatus can be made compact.

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According to the second aspect of the present invention, the light guiding member is integrally formed with the light conductive member so that not only the number of components but also the number of processes in assembling can be reduced. Thus the productivity can be improved.

According to the third aspect of the present invention, since the light guiding member and the light conductive member are separately formed, the variation of the position of the respective members can be accommodated by modifying only the shape of the light guiding member with the shape of the light conductive member kept intact. Therefore, the light conductive member can be standardized and thus the productivity can be improved.

According to the fourth aspect of the present invention, the light guiding member is made of one or a plurality of optical fibers which are readily bent, and therefore is easy to manufacture. Thus the productivity can be improved.

According to the fifth aspect of the present invention, the light guiding member is provided with the means for increasing reflection so that light reflectance is improved. Thus the efficiency of using light from the spot-like light source can be improved.

What is claimed is:

1. A spread illuminating apparatus comprising: a transparent substrate made of a light transmissible material and disposed over a screen of a reflection-type liquid crystal display element, and a bar-like light source composed of a light conductive member made of a transparent material and disposed close to and along at least one end face of said transparent substrate, and a spot-like light source disposed on an electric wiring board,

wherein a light guiding member guiding light is provided between an end of said light conductive member and said spot-like light source, said light guiding member provided with a means for increasing reflection which improves light reflectance.

2. A spread illuminating apparatus comprising: a transparent substrate made of a light transmissible material and disposed over a screen of a reflection-type liquid crystal display element: and a bar-like light source composed of a light conductive member made of a transparent material and disposed close to and along at least one end face of said transparent substrate, and a spot-like light source disposed on an electric wiring board,

wherein a light guiding member guiding light is provided between an end of said light conductive member and said spot-like light source, said light guiding member formed integrally with said light conductive member and provided with a means for increasing reflection which improves light reflectance.

3. A spread illuminating apparatus comprising: a transparent substrate made of a light transmissible material and disposed over a screen of a reflection-type liquid crystal display element: and a bar-like light source composed of a light conductive member made of a transparent material and disposed close to and along at least one end face of said transparent substrate, and a spot-like light source disposed on an electric wiring board,

wherein a light guiding member guiding light is provided between an end of said light conductive member and said spot-like light source, said light guiding member formed separately from said light conductive member and provided with a means for increasing reflection which improves light reflectance.

\* \* \* \* \*



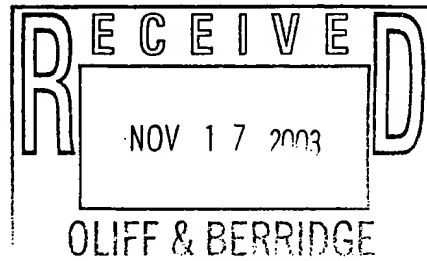
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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/769,295	12/02/2003	6655809	108467	4830

25944 7590 11/13/2003

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## ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

### Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 0 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 0 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) system (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (703) 305-1383. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at (703) 305-8283.

### APPLICANT(S):

Shingo Suzuki, Iwata-gun, JAPAN.  
Koichi Toyoda, Iwata-gun, JAPAN.

# PART B - FEE(S) TRANSMITTAL

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/769,295	01/26/2001	Shingo Suzuki	108467	4830

TITLE OF INVENTION: SPREAD ILLUMINATING APPARATUS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1300	\$300	\$1600	10/28/2003

EXAMINER	ART UNIT	CLASS-SUBCLASS
SAWNEY, HARGOBIND S	2875	362-031000

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1 Oliff & Berridge, PLC  
2 \_\_\_\_\_  
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(A) NAME OF ASSIGNEE

Minebea, Co., Ltd.

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Kitasaku-gun, Japan

Please check the appropriate assignee category or categories (will not be printed on the patent) ☐ individual ☒ corporation or other private group entity ☐ government

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- ☐ Advance Order - # of Copies \_\_\_\_\_

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(Authorized Signature)

(Date)

Jaquelin K. Spong, Reg No. 52,241 09/30/2003

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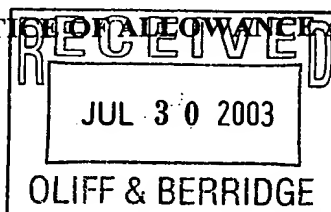


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EXAMINER	
SAWHNEY, HARGOBIND S	
ART UNIT	CLASS-SUBCLASS
2875	362-031000

DATE MAILED: 07/28/2003

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/769,295	01/26/2001	Shingo Suzuki	108467	4830

DUE DATE

OCT 28 2003

TITLE OF INVENTION: SPREAD ILLUMINATING APPARATUS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1300	\$300	\$1600	10/28/2003

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. **PROSECUTION ON THE MERITS IS CLOSED.** THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

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B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check the box below and enclose the PUBLICATION FEE and 1/2 the ISSUE FEE shown above.

☐ Applicant claims SMALL ENTITY status.  
See 37 CFR 1.27.

II. PART B - FEE(S) TRANSMITTAL should be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). Even if the fee(s) have already been paid, Part B - Fee(s) Transmittal should be completed and returned. If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted.

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Page 1 of 4

PTOL-85 (REV. 05-03) Approved for use through 04/30/2004.

**DOCKETED**  
By MPK on 7/30 2003  
and  
By Jmm on 7/30 2003  
Oliff & Berridge

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/769,295	01/26/2001	Shingo Suzuki	108467	4830

TITLE OF INVENTION: SPREAD ILLUMINATING APPARATUS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1300	\$300	\$1600	10/28/2003

EXAMINER	ART UNIT	CLASS-SUBCLASS
SAWHNEY, HARGOBIND S	2875	362-031000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/769,295	01/26/2001	Shingo Suzuki	108467	4830

25944 7590 07/28/2003  
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EXAMINER

SAWHNEY, HARGOBIND S

ART UNIT PAPER NUMBER

2875

DATE MAILED: 07/28/2003

## Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The patent term adjustment to date is 0 days. If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the term adjustment will be 0 days.

If a continued prosecution application (CPA) was filed in the above-identified application, the filing date that determines patent term adjustment is the filing date of the most recent CPA.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/769,295	01/26/2001	Shingo Suzuki	108467	4830
25944	7590	07/28/2003	EXAMINER	
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320 UNITED STATES			SAWHNEY, HARGOBIND S	
			ART UNIT	PAPER NUMBER
			2875	

DATE MAILED: 07/28/2003

## Notice of Fee Increase on January 1, 2003

If a reply to a "Notice of Allowance and Fee(s) Due" is filed in the Office on or after January 1, 2003, then the amount due will be higher than that set forth in the "Notice of Allowance and Fee(s) Due" since there will be an increase in fees effective on January 1, 2003. See Revision of Patent and Trademark Fees for Fiscal Year 2003: Final Rule, 67 Fed. Reg. 70847, 70849 (November 27, 2002).

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# Notice of Allowability

Application No.

09/769,295

Examiner

Hargobind S Sawhney

Applicant(s)

SUZUKI ET AL.

Art Unit

2875

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendment filed on July 1, 2003.

2. ☒ The allowed claim(s) is/are 5-7.

3. ☒ The drawings filed on 26 April 2001 are accepted by the Examiner.

4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☒ All b) ☐ Some\* c) ☐ None of the:

1. ☒ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.

3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

(a) ☐ The translation of the foreign language provisional application has been received.

6. ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

7. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

8. ☐ CORRECTED DRAWINGS must be submitted.

(a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached

1) ☐ hereto or 2) ☐ to Paper No. \_\_\_\_\_.

(b) ☐ including changes required by the proposed drawing correction filed \_\_\_\_\_, which has been approved by the Examiner.

(c) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No. \_\_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet.

☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

## Attachment(s)

1 ☐ Notice of References Cited (PTO-892)

3 ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

5 ☐ Information Disclosure Statements (PTO-1449), Paper No. \_\_\_\_\_.

7 ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

2 ☐ Notice of Informal Patent Application (PTO-152)

4 ☐ Interview Summary (PTO-413), Paper No. \_\_\_\_\_.

6 ☐ Examiner's Amendment/Comment

8 ☒ Examiner's Statement of Reasons for Allowance

9 ☐ Other

**DETAILED ACTION**

1. The amendment filed on July 1, 2003 has been entered. Accordingly, claims 1-4 and 8 have been cancelled, and claims 5-7 have been amended.

***Allowable Subject Matter***

2. Claims 5-7 are allowed over prior art.

The following is an examiner's statement of reasons for allowance:

3. The prior art of record, including Abe et al. (U.S. Patent No. 5,857,761) and Suzuki (Japanese Patent No. JP 11-242222 A), does not show or suggest the applicant's invention as claimed. Specifically, the prior art of record does not disclose proper motivation for combining:

- a substrate made of a light transmissible material, and disposed over a reflection-type lighted crystal display element as recited in claims 5-7;
- a bar-like light source made of a light conductive material, and positioned closed to and along at least one end face of the transparent substrate as recited in claims 5-7;
- a spot-like light source disposed on an electric wiring board as recited in claims 5-7;

- a light conductive guiding member guiding light, and positioned between the end of the light conductive member and the spot-like light source as recited in claims 5-7; and
- the light guiding member provided with a means – a reflective film or layer – improving reflectance as recited in claims 5-7.

The above-indicated combination, including a light conductive guiding member with means – reflective film or layer - improving reflectance its makes this invention unique.

Neither combined nor individual teaching of Abe et al. (U.S. Patent No. 5,857,761) and Suzuki (Japanese Patent No. JP 11-242222 A) discloses a spread illumination apparatus including a light conductive guiding member with means – a reflective film or layer – improving reflectance as recited in claims 5-7. Note: The above-indicated light conductive guiding member is the element, which is in addition to the light conductive member including in the bar-like light source. Further, light conductive guiding member changes the direction of the light beam.

Therefore, claims 5-7 are allowed over prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Art Unit: 2875

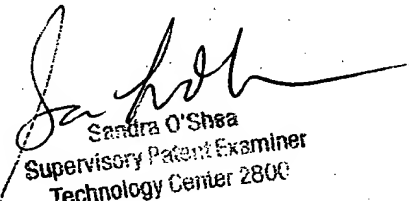
**Conclusion**

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hargobind S Sawhney whose telephone number is 703-306-5909. The examiner can normally be reached on 7:30 A.M. to 4:30 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sandra O'Shea can be reached on 703-305-4939. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-2956.

HSS  
July 23, 2003

  
Sandra O'Shea  
Supervisory Patent Examiner  
Technology Center 2800



**PATENT APPLICATION**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re the Application of

Shingo SUZUKI et al.

**ATTN:**

**Refund Section  
Accounting Div.  
Office of Finance**

Application No.: 09/769,295

Docket No.: 108467

Filed: January 26, 2001

For: SPREAD ILLUMINATING APPARATUS

**REQUEST FOR REFUND TO DEPOSIT ACCOUNT**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

Attached hereto is a copy of a Monthly Statement of Deposit Account (dated July 2003) showing a charge of \$110.00 related to the above-referenced application. This charge is marked with Fee Code 1251, which is the Patent Office Fee for a first month Extension of Time, for the submission of an Amendment filed on June 9, 2003. However, a Petition for Extension of Time with a payment of \$110.00 (see the enclosed returned check no. 142895) was filed when filing the Amendment on June 9, 2003. The payment of the check no. 142895 should have satisfied the requirement for the Petition for Extension of Time for filing the Amendment, because the Amendment was filed on June 9, 2003, within one month of the expiration date of May 28, 2003 for the shortened statutory period for response. Thus, the PTO charge of the \$110.00 with the fee code 1251 is in error.

Accordingly, it is respectfully requested that this charge be re-credited to Deposit Account No. 15-0461 and that the Patent Office acknowledge this credit in writing.

Respectfully submitted,

James A. Oliff  
Registration No. 27,075

Gang Luo  
Registration No. 50,559

JAO:GXL/ale

Attachments:

July 2003 Monthly Statement of Deposit Account

Copy of Returned Check No. 142895

Date: July 24, 2003

**OLIFF & BERRIDGE, PLC**  
**P.O. Box 19928**  
**Alexandria, Virginia 22320**  
**Telephone: (703) 836-6400**

<p><b>DEPOSIT ACCOUNT USE AUTHORIZATION</b> Please grant any extension necessary for entry; Charge any fee due to our Deposit Account No. 15-0461</p>
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**Deposit Account Statement**

**Requested Statement Month:**

July 2003

**Deposit Account Number:**

150461

**Name:**

OLIFF & BERRIDGE P L C

**Attention:**

BARBARA WATTS

**Address:**

277 SOUTH WASHINGTON STREET

**City:**

ALEXANDRIA

**State:**

VA

**Zip:**

22314

DATE	SEQ	POSTING REF TXT	ATTORNEY DOCKET NBR	FEE CODE	AMT
07/08	3	09769295	108467	1251	\$110.00

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ALEXANDRIA, VA 22314  
(703) 836-6400

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First Virginia Bank  
Falls Church, VA 22042

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DOCKET NO. 108467

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*Janet H. Oliff*

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PATENT AND TRADEMARK OFFICE  
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FIRST VIRGINIA BANK  
CREDIT DIVISION

**PATENT APPLICATION**

**RESPONSE UNDER 37 CFR §1.116  
EXPEDITED PROCEDURE  
TECHNOLOGY CENTER ART UNIT 2875**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Shingo SUZUKI et al.

Group Art Unit: 2875

Application No.: 09/769,295

Examiner: H. Sawhney

Filed: January 26, 2001

Docket No.: 108467

For: SPREAD ILLUMINATING APPARATUS

**AMENDMENT AFTER FINAL REJECTION UNDER 37 CFR §1.116**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

In reply to the February 28, 2003, Office Action, the shortened statutory period for response having been extended by the attached Petition for Extension of Time, the following is submitted:

**Amendments to the Claims** are reflected in the listing of claims; and

**Remarks.**

**Amendments to the Claims:**

1.-4. (Canceled)

5. (Re-presented - Formerly Dependent Claim No. 5) ~~The spread illuminating apparatus as claimed in claim 1, wherein~~ A spread illuminating apparatus comprising: a transparent substrate made of a light transmissible material and disposed over a screen of a reflection-type liquid crystal display element; and a bar-like light source composed of a light conductive member made of a transparent material and disposed close to and along at least one end face of said transparent substrate, and a spot-like light source disposed on an electric wiring board,

wherein a light guiding member guiding light is provided between an end of said light conductive member and said spot-like light source, said light guiding member is provided with a means for increasing reflection which improves light reflectance.

6. (Re-presented - Formerly Dependent Claim No. 6) ~~The spread illuminating apparatus as claimed in claim 2, wherein~~ A spread illuminating apparatus comprising: a transparent substrate made of a light transmissible material and disposed over a screen of a reflection-type liquid crystal display element; and a bar-like light source composed of a light conductive member made of a transparent material and disposed close to and along at least one end face of said transparent substrate, and a spot-like light source disposed on an electric wiring board,

wherein a light guiding member guiding light is provided between an end of said light conductive member and said spot-like light source, said light guiding member formed integrally with said light conductive member and said light guiding member is provided with a means for increasing reflection which improves light reflectance.

7. (Re-presented - Formerly Dependent Claim No. 7) ~~The spread illuminating apparatus as claimed in claim 3, wherein~~ A spread illuminating apparatus comprising: a transparent substrate made of a light transmissible material and disposed over a screen of a

reflection-type liquid crystal display element; and a bar-like light source composed of a light  
conductive member made of a transparent material and disposed close to and along at least  
one end face of said transparent substrate, and a spot-like light source disposed on an electric  
wiring board,

wherein a light guiding member guiding light is provided between an end of said light  
conductive member and said spot-like light source, said light guiding member formed  
separately from said light conductive member and ~~said light guiding member~~ is provided with  
a means for increasing reflection which improves light reflectance.

8. (Canceled)

**REMARKS**

By this Amendment, claims 1-4 and 8 are canceled. Accordingly, claims 5-7 are pending in this application.

Applicants appreciate the Office Action indication that claims 5-7 contain allowable subject matter. Claims 5-7 are rewritten into independent form. Applicants respectfully submit that claims 1-4 and 8 are not canceled because of prior art. Their cancellation is to obtain quick allowance of the subject matter recited in claims 5-7. Applicants expressly reserve the right to further pursue the subject matter recited in claims 1-4 and 8 in a Continuation application.

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 5-7 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,

James A. Oliff  
Registration No. 27,075

Gang Luo  
Registration No. 50,559

JAO:GXL/ale

Attachment:  
Petition for Extension of Time

Date: June 9, 2003

**OLIFF & BERRIDGE, PLC**  
**P.O. Box 19928**  
**Alexandria, Virginia 22320**  
**Telephone: (703) 836-6400**

<p><b>DEPOSIT ACCOUNT USE AUTHORIZATION</b> Please grant any extension necessary for entry; Charge any fee due to our Deposit Account No. 15-0461</p>
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**PATENT APPLICATION**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Date June 9, 2003

In re the Application of

Shingo SUZUKI et al.

Group Art Unit: 2875

Application No.: 09/769,295

Examiner: H. Sawhney

Filed: January 26, 2001

Docket No.: 108467

For: SPREAD ILLUMINATING APPARATUS

**LARGE ENTITY PETITION FOR 1<sup>st</sup> - 3<sup>rd</sup> EXTENSION  
OF TIME UNDER 37 C.F.R. §1.136(a) AND  
TRANSMITTAL OF FEE UNDER 37 C.F.R. §1.17**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

Transmitted herewith is a response to the outstanding Official Action in the above-identified patent application. The shortened statutory period having expired May 28, 2003, an extension of time for a period of 1 month is hereby requested. Attached hereto is our Check No. 142895 in the amount of \$110.00 in payment for:

<u>XX</u>	Extension fee for response within first month pursuant to §1.136(a) (\$110.00)
<u>      </u>	Extension fee for response within second month pursuant to §1.136(a) (\$410.00)
<u>      </u>	Extension fee for response within third month pursuant to §1.136(a) (\$930.00)

The Commissioner is hereby authorized to charge any additional fee or credit any overpayment associated with this communication to Deposit Account No. 15-0461. Two copies of this petition are enclosed.

Respectfully submitted,

James A. Oliff  
Registration No. 27,075

Gang Luo  
Registration No. 50,559

JAO:GXL/ale

OLIFF & BERRIDGE, PLC  
P.O. Box 19928  
Alexandria, Virginia 22320  
Telephone: (703) 836-6400

DEPOSIT ACCOUNT USE AUTHORIZATION Please grant any extension necessary for entry; Charge any fee due to our Deposit Account No. 15-0461
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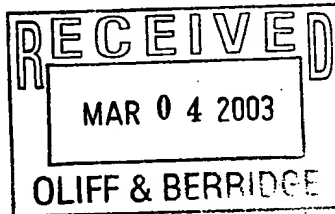
UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
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Washington, D.C. 20231  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/769,295	01/26/2001	Shingo Suzuki	108467	4830

25944 7590 02/28/2003

OLIFF & BERRIDGE, PLC  
P.O. BOX 19928  
ALEXANDRIA, VA 22320



EXAMINER

SAWHNEY, HARGOBIND S

ART UNIT PAPER NUMBER

2875

DATE MAILED: 02/28/2003

FINAL REJECTION/  
NOTICE OF APPEAL

Please find below and/or attached an Office communication concerning this application or proceeding.

DUE DATE

MAY 28 2003

DOCKETED  
By MPK on 3/4 2003  
and  
By MLD on 3/4 2003  
Oliff & Berridge

DOCKETED  
By MPK on 3/4 2003  
and  
By MLD on 3/4 2003  
Oliff & Berridge

**Office Action Summary**

Application No.

09/769,295

Applicant(s)

SUZUKI ET AL.

Examiner

Hargobind S Sawhney

Art Unit

2875

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 February 2003.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 8 is/are rejected.
- 7) ☐ Claim(s) 5-7 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All   b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)                      4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)                      5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_                      6) ☐ Other:

### DETAILED ACTION

1. The amendment filed on February 12, 2003 has been entered. Accordingly, Claim 8 has been amended.
2. The previous office action released as the Final Action dated November 13, 2002 has been withdrawn herewith.

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abe et al. (U.S. Patent No. 5,857,761) in view of Suzuki (Japanese Patent No. JP 11-242222 A).

Regarding Claim 1, Abe et al. (U.S. Patent No. 5,857,761) discloses a spread illuminating apparatus (Figure 1) comprising:

- a transparent substrate 2 usable as a light source of a liquid crystal display (column 1, lines 10-13);

Art Unit: 2875

- a bar-like light source including elements 1-3 (Figure 1, column 5, lines 29 and 30) composed of a light conductive member 2,3 (Figure 1, column 5, line 28) made of a transparent material (Figure 1, column 5, lines 32-35), and positioned close to and along at least one end face 5 of the transparent substrate 4 (Figure 1, column 5, lines 52-57);
- the substrate 4 made of a light transmitting material (Figure 1, column 5, line 31);
- the spot-like light source 1 (Figure 1, column 5, line 27) inherently positioned on a electric wiring board ( not shown); and
- the light guiding member 2 guiding the light (Figure 1, column 5, lines 28 and 29) and being positioned between the end 3a of the light conductive member 3 and the spot-like light source 1 (Figure 1).

Although, Abe teaches a use of a transparent substrate as a flat light source for a LCD (column 1, lines 10-13), he specifically does not teach the LCD being a reflective-type LCD requiring positioning of the transparent substrate over its screen.

On the other hand, Suzuki (Japanese Patent No. JP 11-242222 A) teaches a transparent substrate 2 (Figure 1) made of a light transmissible material, and positioned over a screen of a reflection type liquid crystal display (LCD) 51 (Figure 1).

It would be have been obvious to one of ordinary skill in the art at the time of the invention to make use of the spread illuminating system of Abe by positioning the transparent substrate below the upper surface of the reflection-type LCD as taught by

Art Unit: 2875

Suzuki for the benefit and advantage of brightening the screen without being influenced by the brightness of the surrounding and with an efficient use of energy.

Regarding Claim 2, Abe further teaches the light guiding member 2 being formed integrally with the light conductive member 3 (Figure 1).

Regarding claims 3 and 4, Abe et al. (U.S. Patent No. 5,857,761) further teaches the light guiding member 2 (Figure 1, column 5, line 32) being an optical fiber. However, neither combined nor independent teaching of Abe and Suzuki discloses a spread illuminating apparatus comprising a light guiding member separately formed from a light conductive member.

It would have been an obvious matter of design choice to modify the spread illumination apparatus comprising a light guiding member separately formed from a light conductive member instead of it being an integral with the light conductive member. Since the applicant has not disclosed that a separately formed light guiding member solves any problem or is for a particular reason. It appears that the claimed invention would perform equally well with a light guiding member separately formed from a light conductive member.

5. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Abe et al. (U.S. Patent No. 5,857,761).

Abe et al. ('761) discloses a spread illuminating apparatus (Figure 1) having:

- a bar-like light source including elements 1-3 (Figure 1, column 5, lines 29 and 30) positioned in the vicinity of an end surface 5 of a transparent substrate 4 (Figure 1, column 5, lines 31 and 54);

Art Unit: 2875

- the substrate 4 made of a light transmitting material (Figure 1, column 5, line 31);
- the bar-like light source including elements 1-3 further comprising a light conductive member 3 made of a light transmitting material (Figure 1, column 5, lines 28 and 30), formed bar-like, and positioned closed to and along the end face 5 of the transparent substrate 4 (Figure 1);
- a spot-like light source 1 (Figure 1, column 5, line 27) facing the end of the light conductive member 3 (Figure 1);
- the light guiding member 2 guiding the light (Figure 1, column 5, lines 28 and 29) emitted by the spot-like light source 1, and being positioned between the end 3a of the light conductive member 3 and the spot-like light source 1 (Figure 1); and
- the light guiding member 2 being formed integrally with the light conductive member 3 (Figure 1).

Abe et al. ('761) teaches the light guide member being formed integrally with the light conductive member. However, Abe makes both the light guide member and light conductive member integral with a joint. Therefore, Abe does not teach the light guide member and light conductive member being formed from a one-piece member including no joint.

Art Unit: 2875

It would be have been obvious to one of ordinary skill in the art at the time of the invention to make the light guide member and light conductive member being formed from a one- piece member, since it has been held that forming in one piece an article which has formerly formed in two pieces and put together involves only routine skill in the art.

***Allowable Subject Matter***

6. Claim 5-7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art of record, including Abe et al. (U.S. Patent No. 5,857,761) in view of Suzuki (Japanese Patent No. JP 11-242222 A), fails to show or suggest the applicant's invention as claimed. Specifically, the prior art of record does not disclose proper motivation for combining a light guiding member including a means for increasing reflection as recited in claims 5-7.

***Response to Amendment***

7. Applicant's arguments filed on February 10, 2003 have been fully considered but they are not persuasive.

Art Unit: 2875

Applicant's arguments with respect to the 35 U.S.C. § 102(b) rejections of claim 8 has been considered but are moot in view of the new ground(s) of rejections.

***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kawaguchi et al. (US Patent No. 6,283,602 B1) discloses an assembly of a lighting device with a liquid crystal display comprising some of the features including a point light source, a bar-like light conductive unit, a transparent substrate and a LCD.

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.



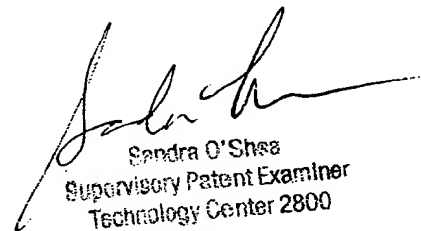
Art Unit: 2875

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hargobind S Sawhney whose telephone number is 703-306-5909. The examiner can normally be reached on 6:15 - 2:45.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sandra O'Shea can be reached on 703-305-4939. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-2956.

HSS  
February 25, 2003



Sandra O'Shea  
Supervisory Patent Examiner  
Technology Center 2800

**Notice of References Cited**

Application/Control No.

09/769,295

Applicant(s)/Patent Under  
Reexamination  
SUZUKI ET AL.

Examiner

Hargobind S Sawhney

Art Unit

2875

Page 1 of 1

**U.S. PATENT DOCUMENTS**

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-			
	B	US-			
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

**FOREIGN PATENT DOCUMENTS**

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
✓	N	JP 11-242222	09-1999	Japan	Suzuki	---
	O					
	P					
	Q					
	R					
	S					
	T					

**NON-PATENT DOCUMENTS**

		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

\*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)  
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

**PATENT APPLICATION**

**RESPONSE UNDER 37 CFR §1.116  
EXPEDITED PROCEDURE  
TECHNOLOGY CENTER ART UNIT 2875**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re the Application of

Shingo SUZUKI et al.

Group Art Unit: 2875

Application No.: 09/769,295

Examiner: H. Sawhney

Filed: January 26, 2001

Docket No.: 108467

For: SPREAD ILLUMINATING APPARATUS

**AMENDMENT AFTER FINAL REJECTION UNDER 37 CFR §1.116**

Director of the U.S. Patent and Trademark Office  
Washington, D.C. 20231

Sir:

In reply to the November 13, 2002 Office Action, please amend the above-identified application as follows:

**IN THE CLAIMS:**

Please replace claim 8 as follows:

8. (Amended) A spread illuminating apparatus having a bar-like light source disposed in the vicinity of an end surface of a transparent substrate made of a light transmissible material, characterized in that said bar-like light source is composed of a light conductive member which is made of a transparent material, formed bar-like and disposed close to and along at least one end face of said transparent substrate, and a spot-like light source which is disposed facing at least one end of said light conductive member, and that a light guiding member guiding light is provided between the end of said light conductive member and said spot-like source;

wherein said light guiding member and said light conductive member are formed integrally from a one-piece member.

REMARKS

Claims 1-8 are pending. By this Amendment, claim 8 is amended to recite that the light guiding member and the light conductive member are formed integrally from a one-piece member, to distinguish Abe. No new matter is added. Reconsideration of the application is respectfully requested.

The attached Appendix includes marked-up copies of each rewritten claim (37 C.F.R. §1.121(c)(1)(ii)).

Entry of the amendments is proper under 37 CFR §1.116 since the amendments: (a) place the application in condition for allowance (for the reasons discussed herein); (b) do not raise any new issue requiring further search and/or consideration (since the amendments amplify issues previously discussed throughout prosecution); and (c) place the application in better form for appeal, should an appeal be necessary. Entry of the amendments is thus respectfully requested.

Applicants thank Examiner Sawhney for the courtesy extended to Applicants' representative, Mr. Luo, during the January 15 and 28 telephone interviews. The substance of the interviews is incorporated in the Remarks below.

The Office Action rejects claim 8 under 35 U.S.C. §102(b) over U.S. Patent No. 5,857,761 to Abe et al. This rejection is respectfully traversed.

The Office Action asserts that Abe discloses the subject matter recited in claim 8. However, Applicants respectfully submit that Abe does not disclose that the light guiding member and the light conductive member are formed integrally from a one-piece member, as recited in claim 8.

Abe discloses a light guide 2 that is connected to a radiation member 3. See Fig. 1 and col. 5, lines 25-41. The light guide 2 and the radiation member 3 are made of different materials. See col. 5, lines 25-41. Thus, as discussed in the telephone interviews, Abe's light guide 2 and radiation member 3 are not formed integrally from a one-piece member.

Therefore, Abe does not disclose that the light guiding member and the light conductive member are formed integrally from a one-piece member, as recited in claim 8.

Furthermore, in the telephone interviews, the Examiner suggested that the subject matter recited in claim 8 may be rendered obvious by Abe. However, Abe does not suggest or provide any motivation to one of ordinary skill to use the same material for the light guide 2 and the radiation member 3, and to form these two elements from a one-piece member. As is well known, forming these elements from a one-piece member as opposed to two separate pieces made of different materials results in large differences in areas such as manufacturing, for example. Thus, one of ordinary skill in the art would not be motivated to make the modification, unless there are explicit teachings to do so. Thus, one of ordinary skill in the art would not be motivated by Abe alone to change the different materials taught by Abe and use a single material, and change combining two pieces formed separately to forming from one piece the combined two-piece structure of Abe. In fact, Abe teaches away from the subject matter recited in claim 8. Accordingly, Abe would not have rendered obvious the subject matter recited in claim 8.

For at least the above reasons, Abe does not disclose each and every element recited in claim 8, nor does Abe suggest the subject matter recited in claim 8. Accordingly, withdrawal of the rejection of claim 8 under 35 U.S.C. §102(b) is respectfully requested.

The Office Action rejects claims 1-7 under 35 U.S.C. §103(a) over Abe in view of U.S. Patent No. 6,431,716 to Kusakabe. Applicants respectfully submit that this rejection is improper.

Applicants respectfully submit that Kusakabe has the same assignee (Minebea Co., Ltd.) as the above-identified application. Thus, as discussed in the telephone interviews, Kusakabe cannot be applied as a §103/§102(e) reference under 35 U.S.C. §103(c), which states:

Subject matter developed by another person, which qualifies as prior art only under one or more of subsections (e), (f), and (g) of §102 of this

title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

For at least the above reasons, withdrawal of the rejection of claims 1-7 under 35 U.S.C. §102(b) is respectfully requested.

In view of the foregoing amendments and remarks, Applicants submit that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-8 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in better condition for allowance, the Examiner is invited to contact Applicants' undersigned representative at the telephone number set forth below.

Respectfully submitted,

James A. Oliff  
Registration No. 27,075

Gang Luo  
Registration No. 50,559

JAO:GXL/ale

Attachment:  
Appendix

Date: February 10, 2003

**OLIFF & BERRIDGE, PLC**  
**P.O. Box 19928**  
**Alexandria, Virginia 22320**  
**Telephone: (703) 836-6400**

<p><b>DEPOSIT ACCOUNT USE AUTHORIZATION</b> Please grant any extension necessary for entry; Charge any fee due to our Deposit Account No. 15-0461</p>
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APPENDIX

Changes to Claims:

The following is a marked-up version of the amended claim:

8.     (Amended) A spread illuminating apparatus having a bar-like light source disposed in the vicinity of an end surface of a transparent substrate made of a light transmissible material, characterized in that said bar-like light source is composed of a light conductive member which is made of a transparent material, formed bar-like and disposed close to and along at least one end face of said transparent substrate, and a spot-like light source which is disposed facing at least one end of said light conductive member, and that a light guiding member guiding light is provided between the end of said light conductive member and said spot-like source;

          wherein said light guiding member and said light conductive member are formed integrally as-from a one-piece member.

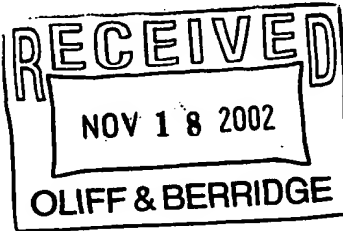


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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/769,295	01/26/2001	Shingo Suzuki	108467	4830

25944 7590 11/13/2002  
OLIFF & BERRIDGE, PLC  
P.O. BOX 19928  
ALEXANDRIA, VA 22320



EXAMINER	
SAWHNEY, HARGOBIND S	
ART UNIT	PAPER NUMBER
2875	

DATE MAILED: 11/13/2002

**FINAL REJECTION/  
NOTICE OF APPEAL**

Please find below and/or attached an Office communication concerning this application or proceeding.

**DUE DATE**

**FEB 13 2003**

**DOCKETED**  
By MPA on 11/18 2002  
and  
By Jmm on 11/18 2002  
Oliff & Berridge

**DOCKETED**  
By MPA on 11/18 2002  
and  
By Jmm on 11/18 2002  
Oliff & Berridge



**Office Action Summary**

Application No.

09/769,295

Applicant(s)

SUZUKI ET AL.

Examiner

Hargobind S Sawhney

Art Unit

2875

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 September 2002.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

**DETAILED ACTION**

1. The amendment filed on September 9, 2002 has been entered. Accordingly, Claim 1 has been amended, and a new Claim 8 has been added.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim 8 is rejected under 35 U.S.C. 102(b) as being anticipated by Abe et al. (U.S. Patent No. 5,857,761).

Abe et al. (U.S. Patent No. 5,857,761) discloses a spread illuminating apparatus (Figure 1) comprising:

- a bar-like light source including elements 1-3 (Figure 1, column 5, lines 29 and 30) positioned in the vicinity of an end surface 5 of a transparent substrate 4 (Figure 1, column 5, lines 31 and 54);
- the substrate 4 made of a light transmitting material (Figure 1, column 5, line 31);

Art Unit: 2875

- the bar-like light source including elements 1-3 further comprising a light conductive member 3 made of a light transmitting material (Figure 1, column 5, lines 28 and 30), formed bar-like, and positioned closed to and along the end face 5 of the transparent substrate 4 (Figure 1);
- a spot-like light source 1 (Figure 1, column 5, line 27) facing the end of the light conductive member 3 (Figure 1);
- the light guiding member 2 guiding the light (Figure 1, column 5, lines 28 and 29) emitted by the spot-like light source 1, and being positioned between the end 3a of the light conductive member 3 and the spot-like light source 1 (Figure 1); and
- the light guiding member 2 being formed integrally with the light conductive member 3 (Figure 1).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abe et al. (U.S. Patent No. 5,857,761) in view of Kusakabe (U.S. Patent No. 6,431,716 B1).

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Regarding Claim 1, Abe et al. (U.S. Patent No. 5,857,761) discloses a spread illuminating apparatus (Figure 1) comprising:

- a transparent substrate 2 usable as a light source of a liquid crystal display (column 1, lines 10-13);
- a bar-like light source including elements 1-3 (Figure 1, column 5, lines 29 and 30) composed of a light conductive member 2,3 (Figure 1, column 5, line 28) made of a transparent material (Figure 1, column 5, lines 32-35), and positioned close to and along at least one end face 5 of the transparent substrate 4 (Figure 1, column 5, lines 52-57);
- the substrate 4 made of a light transmitting material (Figure 1, column 5, line 31);
- the spot-like light source 1 (Figure 1, column 5, line 27) inherently positioned on a electric wiring board ( not shown); and
- the light guiding member 2 guiding the light (Figure 1, column 5, lines 28 and 29) and being positioned between the end 3a of the light conductive member 3 and the spot-like light source 1 (Figure 1).

Although, Abe teaches a use of a transparent substrate as a flat light source for a LCD— interpreted as any type- of liquid crystal display (LCD)- he specifically does not teach the LCD being a reflective-type LCD requiring positioning of the transparent substrate over its screen.

On the other hand, Kusakabe (U.S. Patent No. 6,431,716 B1) teaches a transparent substrate 2 (Figure 15, column 2, lines 64-67 and column 3, lines 1 and 2)

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made of a light transmissible material, and positioned over a screen of a reflection type liquid crystal display (LCD) L (Figure 15, column 2, lines 62-67; and column 3, lines 1 and 2).

It would be have been obvious to one of ordinary skill in the art at the time of the invention to make use of the spread illuminating system of Abe by positioning the transparent substrate below the upper surface of the reflection-type LCD as taught by Kusakabe for the benefit and advantage of brightening the screen in a spread manner and independent of its distance from the light source.

Regarding Claim 2, Abe further teaches the light guiding member 2 being formed integrally with the light conductive member 3 (Figure 1).

Regarding claims 3 and 4, Abe et al. (U.S. Patent No. 5,857,761) further teaches the light guiding member 2 (Figure 1, column 5, line 32) being an optical fiber. However, neither combined nor independent teaching of Abe and Kusakabe discloses a spread illuminating apparatus comprising a light guiding member separately formed from a light conductive member.

It would have been an obvious matter of design choice to modify the spread illumination apparatus comprising a light guiding member separately formed from a light conductive member instead of it being an integral with the light conductive member. Since the applicant has not disclosed that a separately formed light guiding member solves any problem or is for a particular reason. It appears that the claimed invention would perform equally well with a light guiding member separately formed from a light conductive member.

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Regarding claims 5-7, dependent on claims 1,2 and 3 respectively, Abe et al. (U.S. Patent No. 5,857,761) does not disclose a spread illumination apparatus comprising a light guiding member including a means for increasing reflection. On the other hand, Kusakabe (U.S. Patent No. 6,431,716 B1) discloses a spread illuminating apparatus (Figures 1 and 3) comprising a light conductive member 13 (Figure 1, column 6, lines 58 and 59) including means 19 and 20 (Figure 3) increasing reflection (Figures 1 and 3, column 7, lines 20-35).

It would be have been obvious to one of ordinary skill in the art at the time of invention to modify the spread illumination apparatus of Abe by providing a light conductive member with reflection increasing means as taught by Kusakabe for the benefits and advantages of providing an illumination apparatus with improved light emitting efficient.

### ***Response to Amendment***

6. Applicant's arguments filed on September 9, 2002 have been fully considered but they are not persuasive.

Applicant's argument with respect to the 35 U.S.C. § 102(b) rejections of claims 1 and 2 and 35 U.S.C. § 103(a) rejections of claims 3-7 have been considered but are moot in view of the new ground(s) of rejections.

**Conclusion**

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kawaguchi et al. (US Patent No. 6,283,602 B1) discloses an assembly of a lighting device with a liquid crystal display comprising some of the features including a point light source, a bar-like light conductive unit, a transparent substrate and a LCD.

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hargobind S Sawhney whose telephone number is 703-306-5909. The examiner can normally be reached on 7:30 - 5:15.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sandra O'Shea can be reached on 703-305-4939. The fax phone numbers


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for the organization where this application or proceeding is assigned are 703-308-7724 for regular communications and 703-308-8303 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-2956.

HSS

11/4/2002



Sandra O'Shea  
Supervisory Patent Examiner  
Technology Center 2800



# **Notice of References Cited**

Application/Control No.  
09/769,295

Applicant(s)/Patent Under  
Reexamination  
SUZUKI ET AL.

Examiner  
Hargobind S Sawhney

Art Unit  
2875

Page 1 of 1

## **U.S. PATENT DOCUMENTS**

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	<input checked="" type="checkbox"/>	US-6,283,602	09-2001	Kawaguchi et al.	362/31
	<input checked="" type="checkbox"/>	US-6,431,716	08-2002	Kusakabe, Kiyoshi	362/31
	<input type="checkbox"/>	C US-			
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## **FOREIGN PATENT DOCUMENTS**

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## **NON-PATENT DOCUMENTS**

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
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	<input type="checkbox"/>	V
	<input type="checkbox"/>	W
	<input type="checkbox"/>	X

\*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)  
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

**PATENT APPLICATION**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Shingo SUZUKI et al.

Group Art Unit: 2875

Application No.: 09/769,295

Examiner: H. Sawhney

Filed: January 26, 2001

Docket No.: 108467

For: SPREAD ILLUMINATING APPARATUS

**AMENDMENT**

Director of the U.S. Patent and Trademark Office  
Washington, D.C. 20231

Sir:

In reply to the May 17, 2002 Office Action, please amend the above-identified application as follows:

**IN THE CLAIMS:**

Please replace claim 1 as follows:

1. (Amended) A spread illuminating apparatus comprising: a transparent substrate made of a light transmissible material and disposed over a screen of a reflection-type liquid crystal display element; and a bar-like light source composed of a light conductive member made of a transparent material and disposed close to and along at least one end face of said transparent substrate, and a spot-like light source disposed on an electric wiring board, wherein a light guiding member guiding light is provided between an end of said light conductive member and said spot-like light source.

Please add new claim 8 as follows:

--8. A spread illuminating apparatus having a bar-like light source disposed in the vicinity of an end surface of a transparent substrate made of a light transmissible material,

characterized in that said bar-like light source is composed of a light conductive member which is made of a transparent material, formed bar-like and disposed close to and along at least one end face of said transparent substrate, and a spot-like light source which is disposed facing at least one end of said light conductive member, and that a light guiding member guiding light is provided between the end of said light conductive member and said spot-like source;

wherein said light guiding member and said light conductive member are formed integrally as a one-piece member.--

REMARKS

Claims 1-8 are pending. By this Amendment, claim 1 is amended to recite a reflection-type liquid crystal display element, to overcome Abe. New claim 8 is added to recite features disclosed at, for example, page 9, lines 13-16 and Fig. 3. No new matter is added. Reconsideration based on the above amendments and the following remarks is respectfully requested.

The attached Appendix includes marked-up copies of each rewritten claim (37 C.F.R. §1.121(c)(1)(ii)).

The Office Action objects to the claims. Claim 1 is amended to obviate informalities. Withdrawal of the objection to the claims is respectfully requested.

The Office Action rejects claims 1 and 2 under 35 U.S.C. §102(b) over Abe et al. (U.S. Patent No. 5,857,761). This rejection is respectfully traversed.

The Office Action asserts that Abe discloses all elements recited in claims 1 and 2. However, Applicants respectfully submit that Abe does not disclose or suggest a transparent substrate ... disposed over a screen of a reflection-type liquid crystal display element, as recited in claim 1.

Abe discloses an illumination device which simplifies the connection between a light source and a radiation plate. See col. 1, lines 53-55. The illumination device also solves the problem of heat generated by the fluorescent tube without a complicated structure associated with the use of bundled optical fibers. See col. 1, lines 18-22 and 27-37. Nowhere does Abe disclose or suggest a transparent substrate disposed over a screen of a reflection-type liquid crystal display element, as recited in claim 1.

For at least the above reasons, Abe does not disclose or suggest the subject matter recited in claim 1 and claim 2 depending therefrom. Withdrawal of the rejection of claims 1 and 2 under 35 U.S.C. §102(b) is respectfully requested.

The Office Action rejects claims 3 and 4 under 35 U.S.C. §103(a) over Abe. This rejection is respectfully traversed.

As discussed above, Abe does not disclose or suggest the subject matter recited in claim 1. Thus, Applicants respectfully submit that claims 3 and 4 are each patentable at least in view of the patentability of claim 1 from which they depend, as well as for the additional features they recite. Withdrawal of the rejection of claims 3 and 4 under 35 U.S.C. §103(a) is respectfully requested.

The Office Action rejects claims 5-7 under 35 U.S.C. §103(a) over Abe in view of Narcisco, Jr. (U.S. Patent No. 5,237,638). This rejection is respectfully traversed.

The Office Action admits that Abe does not teach a spread illumination apparatus comprising a light guiding member having a means of increasing reflection, but asserts that Narcisco discloses a silicon optical waveguide comprising a means for increasing reflection. However, Applicants respectfully submit that Abe and Narcisco, individually or in combination, do not disclose or suggest a transparent substrate disposed over a screen of a reflection-type liquid crystal display element, as recited in claim 1.

Narcisco discloses a flexible optical waveguide possessing a large core diameter for distribution of illuminating light from a source to a target. See Fig. 1 and col. 3, lines 7-10. Nowhere does Narcisco disclose or suggest a transparent substrate disposed over a screen of a reflection-type liquid crystal display element, as recited in claim 1. Thus, Narcisco does not supply the subject matter lacking in Abe. Therefore, Abe and Narcisco, individually or in combination, do not disclose or suggest the subject matter recited in claim 1, and claims 5-7 depending therefrom. Withdrawal of the rejection of claims 5-7 under 35 U.S.C. §103(a) is respectfully requested.

New claim 8 is believed to be patentable. Specifically, new claim 8 is believed to define over Abe, because Abe's light guide 2 and radiation member 3 are separately manufactured and connected at a proximal end 3a of the radiation member 3. See Fig. 1 and col. 5, lines 25-31. While the light guide 2 is a plastic optical fiber having a single core of silicon rubber and a cladding layer, the radiation member 3 is a transparent circular cylinder made of acrylic resin. See col. 5, lines 32-41. Thus, Abe's light guide 2 and radiation member 3 are not formed integrally as a one-piece member.

In contrast, new claim 8 recites a light guiding member and a light conductive member that are formed integrally as a one-piece member. Thus, new claim 8 defines over Abe.

In view of the foregoing amendments and remarks, Applicants respectfully submit that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-8 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact Applicants' undersigned representative at the telephone number set forth below.

Respectfully submitted,

James A. Oliff  
Registration No. 27,075

Gang Luo  
Registration No. 50,559

JAO:GXL/can

Attachment:  
Appendix

Date: September 9, 2002

**OLIFF & BERRIDGE, PLC**  
**P.O. Box 19928**  
**Alexandria, Virginia 22320**  
**Telephone: (703) 836-6400**

<p><b>DEPOSIT ACCOUNT USE AUTHORIZATION</b> Please grant any extension necessary for entry; Charge any fee due to our Deposit Account No. 15-0461</p>
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## APPENDIX

## Changes to Claims:

Claim 8 is added.

The following is a marked-up version of the amended claim:

1. (Amended) A spread illuminating apparatus ~~having comprising:~~ a transparent substrate made of a light transmissible material and disposed over a screen of a reflection-type liquid crystal display element; and a bar-like light source disposed in the vicinity of an end surface of a transparent substrate made of a light transmissible material, characterized in that said light source is composed of a light conductive member which is made of a transparent material, formed bar-like and disposed close to and along at least one end face of said transparent substrate, and a spot-like light source which is disposed at at least one end of said light conductive member, on an electric wiring board.  
wherein ~~and that~~ a light guiding member which can guide ~~guiding~~ light is provided between ~~the~~ an end of said light conductive member and said spot-like light source.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Date September 9, 2002

In re the Application of

Shingo SUZUKI et al.

Group Art Unit: 2875

Application No.: 09/769,295

Examiner: H. Sawhney

Filed: January 26, 2001

Docket No.: 108467

For: SPREAD ILLUMINATING APPARATUS

**LARGE ENTITY PETITION FOR 1<sup>st</sup> - 3<sup>rd</sup> EXTENSION  
OF TIME UNDER 37 C.F.R. §1.136(a) AND  
TRANSMITTAL OF FEE UNDER 37 C.F.R. §1.17**

Director of the U.S. Patent and Trademark Office  
Washington, D.C. 20231

Sir:

Transmitted herewith is a response to the outstanding Official Action in the above-identified patent application. The shortened statutory period having expired August 17, 2002, an extension of time for a period of one month is hereby requested. Attached hereto is our Check No. 134211 in the amount of \$110.00 in payment for:

<u>XX</u>	Extension fee for response within first month pursuant to §1.136(a) (\$110.00)
<u>      </u>	Extension fee for response within second month pursuant to §1.136(a) (\$400.00)
<u>      </u>	Extension fee for response within third month pursuant to §1.136(a) (\$920.00)

The Director is hereby authorized to charge any additional fee or credit any overpayment associated with this communication to Deposit Account No. 15-0461. Two copies of this petition are enclosed.

Respectfully submitted,

James A. Oliff  
Registration No. 27,075

Gang Luo  
Registration No. 50,559

JAO:GXL/can

OLIFF & BERRIDGE, PLC  
P.O. Box 19928  
Alexandria, Virginia 22320  
Telephone: (703) 836-6400

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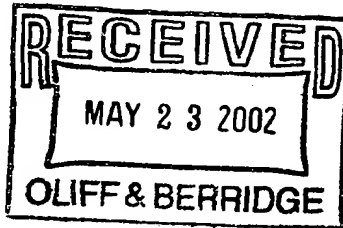
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UNITED STATES DEPARTMENT OF COMMERCE  
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Washington, D.C. 20231  
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/769,295	01/26/2001	Shingo Suzuki	108467	4830

25944 7590 05/17/2002

OLIFF & BERRIDGE, PLC  
P.O. BOX 19928  
ALEXANDRIA, VA 22320



EXAMINER

SAWHNEY, HARGOBIND S

ART UNIT PAPER NUMBER

2875

DATE MAILED: 05/17/2002

**REJECTION**

Please find below and/or attached an Office communication concerning this application or proceeding.

DUE DATE

AUG 17 2002

DOCKETED  
By JAC on 5/23 2002  
and  
By MPS on 5/23 2002  
Oliff & Berridge

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	09/769,295	SUZUKI ET AL.	
	Examiner	Art Unit	
	Hargobind S Sawhney	2875	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

**A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.**

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 11 June 2001.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- |                                                                                                            |                                                                             |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>4</u> | 6) <input type="checkbox"/> Other:                                          |

### **DETAILED ACTION**

1. the preliminary amendment filed on June 11, 2001 has been entered.

Accordingly, Claim 5 has been amended; and new claims 6 and 7 have been added.

### ***Claim Objections***

2. Claims 1-7 are objected to because of the following informalities:

Regarding Claim 1, line 4, "said light source" should be changed as – said bar-like light source --;

Further, regarding Claim 1, line 7, "disposed at at least one end" needs to be revised as

-- disposed facing at at least one end – to make it consistent with lines 30 and 31 on page 5 of the specification. This application has been examined considering the limitation -- disposed facing at at least one end.

In addition, regarding Claim 1, line 9, "can guide light" needs to be revised as – guiding light --. The phrase "can" does not recite limitation in positive manner.

Claims 2-7 are necessarily objected because of their dependency on the objected base Claim 1.

Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –  
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-2 are rejected under 35 U.S.C. 102(b) as being anticipated by Abe et al. (U.S. Patent No. 5,857,761).

Regarding claims 1-2, Abe et al. (U.S. Patent No. 5,857,761) discloses a spread illuminating apparatus (Figure 1) having:

- A bar-like light source including elements 1-3 (Figure 1, column 5, lines 29 and 30) positioned in the vicinity of an end surface 5 of a transparent substrate 4 (Figure 1, column 5, lines 31 and 54);
- The substrate 4 made of a light transmitting material (Figure 1, column 5, line 31);
- The bar-like light source including a light conductive member 3 made of a light transmitting material (Figure 1, column 5, lines 28 and 30), formed bar-like, and positioned closed to and along the end face 5 of the transparent substrate 4 (Figure 1);

Art Unit: 2875

- A spot-like light source 1 (Figure 1, column 5, line 27) facing the end of the light conductive member 3 (Figure 1) and a light guiding member 2 (Figure 1, column 5, line 28);
- the light guiding member 2 guiding the light (Figure 1, column 5, lines 28 and 29) and being positioned between the end 3a of the light conductive member 3 and the spot-like light source 1 (Figure 1);
- the light guiding member 2 being formed integrally with the light conductive member 3 (Figure 1);

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abe et al. (U.S. Patent No. 5,857,761).

Regarding claims 3 and 4, Abe et al. (U.S. Patent No. 5,857,761) further teaches the light guiding member 2 (Figure 1, column 5, line 32) being an optical fiber.

However, Abe does not disclose a spread illuminating apparatus comprising a light guiding member separately formed from a light conductive member.

It would have been an obvious matter of design choice to modify the spread illumination apparatus comprising a light guiding member separately formed from a light conductive member instead of it being an integral with the light conductive member. Since the applicant has not disclosed that a separately formed light guiding member solves any problem or is for a particular reason. It appears that the claimed invention would perform equally well with a light guiding member separately formed from a light conductive member.

7. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abe et al. (U.S. Patent No. 5,857,761) in view of Narcisco, Jr. (U.S. Patent No. 5,237,638).

Regarding Claim 5, dependent on Claim 1; Claim 6, dependent on Claim 2; and Claim 7, dependent on Claim 3, Abe does not teach a spread illumination apparatus comprising a light guiding member having a means of increasing reflection.

On the other hand, Narcisco, Jr. (U.S. Patent No. 5,237,638) discloses a silicone optical wave-guide 10 (Figure 1) comprising a means – reflective coating – (Figure 1, column 1, lines 35-39, and column 4, lines 8-13) encasing the light guiding member 11 (Figure 1) for increasing reflection.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the spread illumination apparatus of Abe by providing the light guiding member with reflective coating as taught by Narcisco, Jr. for the benefit and advantage of efficient illumination with improved light reflectance.

Art Unit: 2875

**Conclusion**

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Aiken (WO Publication No.90/04132) and Cassarly et al. (U.S. Patent No. 5,664,863) each discloses a spread illumination apparatus comprising some of the claimed features including a bar-like light source, a transparent substrate and a light guiding element.

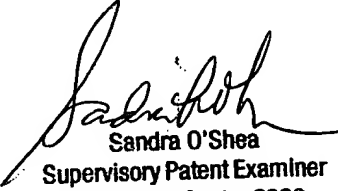
9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hargobind S Sawhney whose telephone number is 703-306-5909. The examiner can normally be reached on 6:15 - 2:45.

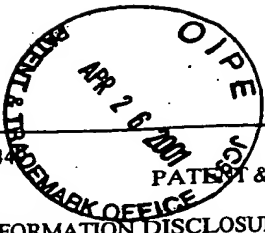
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sandra O'Shea can be reached on 703-305-4939. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-83037724 for regular communications and 703-308-8303 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-2956.

HSS

5/10/2002

  
Sandra O'Shea  
Supervisory Patent Examiner  
Technology Center 2800

Form PTO-144  
(REV. 8-83)US Dept. of Commerce  
PATENT & TRADEMARK OFFICE

## INFORMATION DISCLOSURE STATEMENT

(Use several sheets if necessary)

ATTY DOCKET NO.  
108467APPLICATION NO.  
09/769,295APPLICANT(S)  
Shingo SUZUKI et al.FILING DATE  
January 26, 2001GROUP  
2875

## U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS
<i>JS</i>	5,915,855	06/29/1999	Murase et al.		
<i>JS</i>	5,857,761	01/12/1999	Abe et al.		

## FOREIGN PATENT DOCUMENTS

DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB CLASS

## OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, etc.)


EXAMINER

*H.S. Shaw*

DATE CONSIDERED

*5/10/2001*

Examiner:

Initial if citation considered, whether or not citation is in conformance with M.P.E.P. 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.



<b>Notice of References Cited</b>	Application/Control No. 09/769,295	Applicant(s)/Patent Under Reexamination SUZUKI ET AL.	
	Examiner Hargobind S Sawhney	Art Unit 2875	Page 1 of 1

#### U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-5,237,638	08-1993	Narcisco, Jr., Hugh L. ✓	385/123
	B	US-5,664,863	09-1997	Cassarly et al. ✓	362/293
	C	US-			
	D	US-			
	E	US-			
	E	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

#### FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N	WO 90/04132	04-1990	WO	Aikens	--
	O					
	P					
	Q					
	R					
	S					
	T					

#### NON-PATENT DOCUMENTS

		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

\*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)  
 Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.



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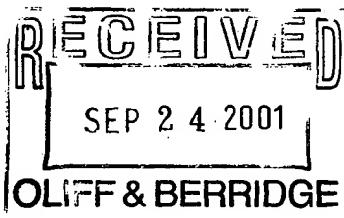
APPLICATION NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO.
09/769,295	01/26/2001	Shingo Suzuki	108467

CONFIRMATION NO. 4830

25944  
OLIFF & BERRIDGE, PLC  
277 S. WASHINGTON STREET, SUITE 500  
ALEXANDRIA, VA 22314



\*OC000000006527739\*



Title: Spread illuminating apparatus

Publication No. US-2001-0017773-A1  
Publication Date: 08/30/2001

Date Mailed: 09/07/2001

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publicly available Searchable Databases via the Internet at [www.uspto.gov](http://www.uspto.gov). The direct link to access the publication is currently <http://www.uspto.gov/patft/>.

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108467

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WASHINGTON, D.C. 20231  
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APPLICATION NUMBER	FILING DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	DRAWINGS	TOT CLAIMS	IND CLAIMS
09/769,295	01/26/2001	2875	710	108467	7	7	1

CONFIRMATION NO. 4830

25944  
OLIFF & BERRIDGE, PLC  
277 S. WASHINGTON STREET, SUITE 500  
ALEXANDRIA, VA 22314

## CORRECTED FILING RECEIPT



\*OC00000006445797\*

AUG 23 2001

Date Mailed: 08/20/2001

Receipt is acknowledged of this nonprovisional Patent Application. It will be considered in its order and you will be notified as to the results of the examination. Be sure to provide the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION when inquiring about this application. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please write to the Office of Initial Patent Examination's Customer Service Center. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections (if appropriate).

## Applicant(s)

Shingo Suzuki, Iwata-gun, JAPAN;  
Koichi Toyoda, Iwata-gun, JAPAN;

## Assignment For Published Patent Application

MINEBEA CO., LTD;

## Domestic Priority data as claimed by applicant

## Foreign Applications

JAPAN 2000-30541 02/08/2000

If Required, Foreign Filing License Granted 05/21/2001

Projected Publication Date: 08/30/2001

Non-Publication Request: No

Early Publication Request: No

## Title

Spread illuminating apparatus

## Preliminary Class

362

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Data entry by : GIZAW, ASTER

Team : OIPE

Date: 08/20/2001

[REDACTED]

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Title 37, Code of Federal Regulations, 5.11 & 5.15**

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- The articles such as "a," "an" and "the" are not included as the first words in the title of an application. They are considered to be unnecessary to the understanding of the title.
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Office of Initial Patent Examination  
Customer Service Center  
Washington, DC 20231

**PATENT APPLICATION**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Shingo SUZUKI et al.

Application No.: 09/769,295

Docket No.: 108467

Filed: January 26, 2001

For: SPREAD ILLUMINATING APPARATUS

**REQUEST FOR CORRECTION OF PALM RECORDS**

Director of the U.S. Patent and Trademark Office  
Washington, D.C. 20231

Sir:

Attached is a photocopy of the original filing receipt on which errors have been corrected in red. These errors are being brought to the attention of the Patent and Trademark Office so that it may correct its records.

Respectfully submitted,

James A. Oliff  
Registration No. 27,075

Thomas J. Pardini  
Registration No. 30,411

Date: June 15, 2001

**OLIFF & BERRIDGE, PLC**  
**P.O. Box 19928**  
**Alexandria, Virginia 22320**  
**Telephone: (703) 836-6400**

<p><b>DEPOSIT ACCOUNT USE AUTHORIZATION</b> Please grant any extension necessary for entry; Charge any fee due to our Deposit Account No. 15-0461</p>
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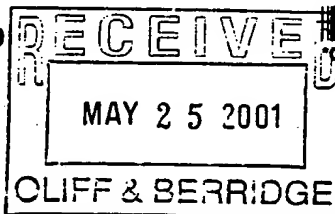
APPLICATION NUMBER	FILING DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	DRAWINGS	TOT CLAIMS	IND CLAIMS
09/769,295	01/26/2001	2875	710	108467	7	7	1

CONFIRMATION NO. 4830

25944

OLIFF & BERRIDGE, PLC  
277 S. WASHINGTON STREET, SUITE 500  
ALEXANDRIA, VA 22314

## FILING RECEIPT



\*0000000006101632\*

Date Mailed: 05/22/2001

Receipt is acknowledged of this nonprovisional Patent Application. It will be considered in its order and you will be notified as to the results of the examination. Be sure to provide the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION when inquiring about this application. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please write to the Office of Initial Patent Examination's Customer Service Center. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections (if appropriate).

## Applicant(s)

Shingo Suzuki, Iwata-gun, JAPAN;  
Koichi Tokoda, Iwata-gun, JAPAN;

## Assignment For Published Patent Application

MINEBEA CO., LTD;

## Domestic Priority data as claimed by applicant

## Foreign Applications

JAPAN 2000-30541 02/08/2000

If Required, Foreign Filing License Granted 05/21/2001

Projected Publication Date: 08/30/2001

Non-Publication Request: No

Early Publication Request: No

## Title

Spread illuminating apparatus



## UNITED STATES PATENT AND TRADEMARK OFFICE

COMMISSIONER FOR PATENTS  
UNITED STATES PATENT AND TRADEMARK OFFICE  
WASHINGTON, D.C. 20231  
www.uspto.gov

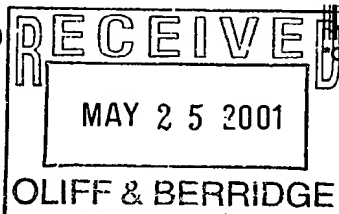
APPLICATION NUMBER	FILING DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	DRAWINGS	TOT CLAIMS	IND CLAIMS
09/769,295	01/26/2001	2875	710	108467	7	7	1

CONFIRMATION NO. 4830

25944

OLIFF & BERRIDGE, PLC  
277 S. WASHINGTON STREET, SUITE 500  
ALEXANDRIA, VA 22314

## FILING RECEIPT



\*0000000006101632\*

Date Mailed: 05/22/2001

Receipt is acknowledged of this nonprovisional Patent Application. It will be considered in its order and you will be notified as to the results of the examination. Be sure to provide the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION when inquiring about this application. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please write to the Office of Initial Patent Examination's Customer Service Center. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections (if appropriate).

## Applicant(s)

Shingo Suzuki, Iwata-gun, JAPAN;  
Koichi Tokoda, Iwata-gun, JAPAN;

## Assignment For Published Patent Application

MINEBEA CO., LTD;

## Domestic Priority data as claimed by applicant

## Foreign Applications

JAPAN 2000-30541 02/08/2000

If Required, Foreign Filing License Granted 05/21/2001

Projected Publication Date: 08/30/2001

Non-Publication Request: No

Early Publication Request: No

## Title

Spread illuminating apparatus



**Preliminary Class**

362

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**Data entry by : HOANG, SON**

**Team : OIPE**

**Date: 05/22/2001**



**LICENSE FOR FOREIGN FILING UNDER  
Title 35, United States Code, Section 184  
Title 37, Code of Federal Regulations, 5.11 & 5.15**

**GRANTED**

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Office of Export Administration, Department of Commerce (15 CFR 370.10 (j)); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

**NOT GRANTED**

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15 (b).

**PLEASE NOTE the following information about the Filing Receipt:**

- The articles such as "a," "an" and "the" are not included as the first words in the title of an application. They are considered to be unnecessary to the understanding of the title.
- The words "new," "improved," "improvements in" or "relating to" are not included as first words in the title of an application because a patent application, by nature, is a new idea or improvement.
- The title may be truncated if it consists of more than 500 characters (letters and spaces combined).
- The docket number allows a maximum of 25 characters.
- If your application was submitted under 37 CFR 1.10, your filing date should be the "date in" found on the Express Mail label. If there is a discrepancy, you should submit a request for a corrected Filing Receipt along with a copy of the Express Mail label showing the "date in."
- The title is recorded in sentence case.

Any corrections that may need to be done to your Filing Receipt should be directed to:

Assistant Commissioner for Patents  
Office of Initial Patent Examination  
Customer Service Center  
Washington, DC 20231

O

O

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Shingo SUZUKI et al.

Application No.: New U. S. Patent Application

Filed: January 26, 2001

Docket No.: 108467

For: SPREAD ILLUMINATING APPARATUS

INFORMATION DISCLOSURE STATEMENT

Director of the U.S. Patent and Trademark Office  
Washington, D.C. 20231

Sir:

Pursuant to 37 CFR §1.56, the attention of the Patent and Trademark Office is hereby directed to the reference(s) listed on the attached PTO-1449. Unless otherwise indicated herein, one copy of each reference is attached. It is respectfully requested that the information be expressly considered during the prosecution of this application, and that the reference(s) be made of record therein and appear among the "References Cited" on any patent to issue therefrom.

- ☒ 1. This Information Disclosure Statement is being filed (a) within three months of the U.S. filing date of this non-CPA application, OR (b) before the mailing date of a first Office Action on the merits in the present application. No certification or fee is required.

Respectfully submitted,

James A. Oliff  
Registration No. 27,075

Thomas J. Pardini  
Registration No. 30,411

JAO:TJP/cln  
Date: April 26, 2001

OLIFF & BERRIDGE, PLC  
P.O. Box 19928  
Alexandria, Virginia 22320  
Telephone: (703) 836-6400

DEPOSIT ACCOUNT USE  
AUTHORIZATION

Please grant any extension  
necessary for entry;  
Charge any fee due to our  
Deposit Account No. 15-0461

Form PTO-1449 (REV. 8-83)		US Dept. of Commerce PATENT & TRADEMARK OFFICE		ATTY DOCKET NO. 108467		APPLICATION NO. 09/769,295	
INFORMATION DISCLOSURE STATEMENT  (Use several sheets if necessary)				APPLICANT(S) Shingo SUZUKI et al.			
				FILING DATE January 26, 2001		GROUP	

U.S. PATENT DOCUMENTS						
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS
		5,915,855	06/29/1999	Murase et al.		
		5,857,761	01/12/1999	Abe et al.		

FOREIGN PATENT DOCUMENTS						
		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB CLASS

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, etc.)	

EXAMINER	DATE CONSIDERED
Examiner: Initial if citation considered, whether or not citation is in conformance with M.P.E.P. 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.	

**PATENT APPLICATION**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Shingo SUZUKI et al.

Application No.: 09/769,295

Filed: January 26, 2001

Docket No.: 108467

For: SPREAD ILLUMINATING APPARATUS

**LETTER TO THE OFFICIAL DRAFTSPERSON**

Director of the U.S. Patent and Trademark Office  
Washington, D.C. 20231

Sir:

Please substitute the attached 7 sheets of formal drawings depicting Figures 1-7 for the corresponding drawings filed with the application.

Respectfully submitted,

James A. Oliff  
Registration No. 27,075

Thomas J. Pardini  
Registration No. 30,411

JAO:TJP/cln

Date: April 26, 2001

**OLIFF & BERRIDGE, PLC**  
**P.O. Box 19928**  
**Alexandria, Virginia 22320**  
**Telephone: (703) 836-6400**

<p><b>DEPOSIT ACCOUNT USE AUTHORIZATION</b> Please grant any extension necessary for entry; Charge any fee due to our Deposit Account No. 15-0461</p>
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**PATENT APPLICATION**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re the Application of

Shingo SUZUKI et al.

Application No.: 09/769,295

Filed: January 26, 2001

Docket No.: 108467

For: SPREAD ILLUMINATING APPARATUS

**CLAIM FOR PRIORITY**

Director of the U.S. Patent and Trademark Office  
Washington, D.C. 20231

Sir:

The benefit of the filing date of the following prior foreign application filed in the following foreign country is hereby requested for the above-identified patent application and the priority provided in 35 U.S.C. §119 is hereby claimed:

Japanese Application No. 2000-030541 filed February 8, 2000

In support of this claim, a certified copy of said original foreign application:

  x   is filed herewith.

           was filed on            in Parent Application No.            filed           .

           will be filed at a later date.

It is requested that the file of this application be marked to indicate that the requirements of 35 U.S.C. §119 have been fulfilled and that the Patent and Trademark Office kindly acknowledge receipt of this document.

Respectfully submitted,

James A. Oliff  
Registration No. 27,075

Thomas J. Pardini  
Registration No. 30,411

JAO:TJP/cln

Date: April 26, 2001

**OLIFF & BERRIDGE, PLC**  
**P.O. Box 19928**  
**Alexandria, Virginia 22320**  
**Telephone: (703) 836-6400**

<p><b>DEPOSIT ACCOUNT USE AUTHORIZATION</b> Please grant any extension necessary for entry; Charge any fee due to our Deposit Account No. 15-0461</p>
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日 本 国 特 許 庁  
PATENT OFFICE  
JAPANESE GOVERNMENT

別紙添付の書類に記載されている事項は下記の出願書類に記載されている事項と同一であることを証明する。

This is to certify that the annexed is a true copy of the following application as filed with this Office.

出 願 年 月 日  
Date of Application:

2000年 2月 8日

出 願 番 号  
Application Number:

特願2000-030541

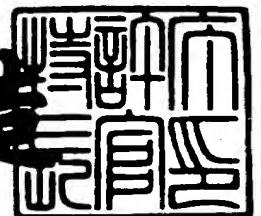
出 願 人  
Applicant (s):

ミネベア株式会社

2001年 1月19日

特許庁長官  
Commissioner,  
Patent Office

及 川 耕 造



出証番号 出証特2000-3113523



1-76-01

108467

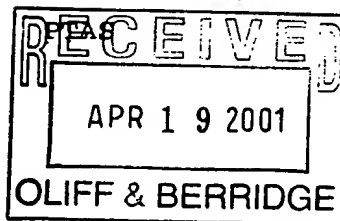
SDK



**UNITED STATES DEPARTMENT OF COMMERCE**  
**Patent and Trademark Office**  
ASSISTANT SECRETARY AND COMMISSIONER  
OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

APRIL 17, 2001

OLIFF & BERRIDGE, PLC  
JAMES A. OLIFF  
P.O. BOX 19928  
ALEXANDRIA, VA 22320



\*101606939A\*

**UNITED STATES PATENT AND TRADEMARK OFFICE**  
**NOTICE OF RECORDATION OF ASSIGNMENT DOCUMENT**

THE ENCLOSED DOCUMENT HAS BEEN RECORDED BY THE ASSIGNMENT DIVISION OF THE U.S. PATENT AND TRADEMARK OFFICE. A COMPLETE MICROFILM COPY IS AVAILABLE AT THE ASSIGNMENT SEARCH ROOM ON THE REEL AND FRAME NUMBER REFERENCED BELOW.

PLEASE REVIEW ALL INFORMATION CONTAINED ON THIS NOTICE. THE INFORMATION CONTAINED ON THIS RECORDATION NOTICE REFLECTS THE DATA PRESENT IN THE PATENT AND TRADEMARK ASSIGNMENT SYSTEM. IF YOU SHOULD FIND ANY ERRORS OR HAVE QUESTIONS CONCERNING THIS NOTICE, YOU MAY CONTACT THE EMPLOYEE WHOSE NAME APPEARS ON THIS NOTICE AT 703-308-9723. PLEASE SEND REQUEST FOR CORRECTION TO: U.S. PATENT AND TRADEMARK OFFICE, ASSIGNMENT DIVISION, BOX ASSIGNMENTS, CG-4, 1213 JEFFERSON DAVIS HWY, SUITE 320, WASHINGTON, D.C. 20231.

RECORDATION DATE: 01/26/2001

REEL/FRAME: 011486/0634  
NUMBER OF PAGES: 2

BRIEF: ASSIGNMENT OF ASSIGNOR'S INTEREST (SEE DOCUMENT FOR DETAILS).

ASSIGNOR:  
SUZUKI, SHINGO

DOC DATE: 01/24/2001

ASSIGNOR:  
TOYODA, KOICHI

DOC DATE: 01/24/2001

ASSIGNEE:  
MINEBEA CO., LTD.  
4106-73 OAZA MIYOTA  
MIYOTA-MACHI, KITASAKU-GUN  
NAGANO-KEN, JAPAN

SERIAL NUMBER: 09769295  
PATENT NUMBER:

FILING DATE:  
ISSUE DATE:

MARY BENTON, EXAMINER  
ASSIGNMENT DIVISION  
OFFICE OF PUBLIC RECORDS

1-26-01

02-07-2001

Director of the U.S. Patent  
and Trademark Office  
Box Assignments  
Washington, D.C. 20231



101606939

U.S. DEPARTMENT OF COMMERCE  
Patent and Trademark Office

Attorney Docket No. 108467

PTO  
JC812  
09/16/99

01/26/01

To the Director of the U.S. Patent and Trademark Office: Please record the attached original document or copy thereof.

1. A. Name of conveying party(ies):  
Shingo SUZUKI  
Koichi TOYODA

B. Additional name(s) of conveying party(ies) attached?  
☐ Yes ☒ No

2. A. Name and address of receiving party(ies):  
MINEBEA CO., LTD.  
4106-73 OAZA MIYOTA,  
MIYOTA-MACHI, KITASAKU-GUN,  
NAGANO-KEN, JAPAN

B. Additional name(s) & address(es) attached?  
☐ Yes ☒ No

3. A. Nature of conveyance:

☒ Assignment ☐ Merger  
☐ Security Agreement ☐ Change of Name  
☐ Other \_\_\_\_\_

B. Execution Date: January 24, 2001

4. A. If this document is being filed together with a new application, the execution date of the application is: January 24, 2001

B. Patent Application No.(s) \_\_\_\_\_

C. Patent No.(s) \_\_\_\_\_

Additional numbers attached? ☐ Yes ☒ No

5. Name and address of party to whom correspondence concerning document should be mailed:

Name: James A. Oliff

Address: OLIFF & BERRIDGE, PLC  
P.O. Box 19928  
Alexandria, VA 22320

6. Total number of applications and patents involved: 1

7. A. Total fee (37 CFR 3.41).....\$ 40.00

B. Enclosed (Check No. 115787)

8. Credit any overpayment or charge any underpayment to deposit account number 15-0461.

02/06/2001 DMYRNE 00000190 09769295

40.00 OP

01 FC:581

9. Statement and signature.

To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy of the original document.

James A. Oliff, Registration No. 27,075  
Joel S. Armstrong, Registration No. 36,430

Date: January 26, 2001

Total number of pages including cover sheet, attachments, and document: 2

# ASSIGNMENT

(1-8) Insert Name(s)  
of Inventor(s)

(1) Shingo SUZUKI \_\_\_\_\_ (7) \_\_\_\_\_  
 (2) Koichi TOYODA \_\_\_\_\_ (8) \_\_\_\_\_  
 (3) \_\_\_\_\_ (9) \_\_\_\_\_  
 (4) \_\_\_\_\_ (10) \_\_\_\_\_  
 (5) \_\_\_\_\_ (11) \_\_\_\_\_ and  
 (6) \_\_\_\_\_ (12) \_\_\_\_\_

In consideration of the sum of one dollar (\$1.00) and other good and valuable consideration paid to each of the undersigned, each undersigned agrees to assign, and hereby does assign, transfer and set over to

(9) Insert Name of Assignee  
 (10) Insert Address of  
Assignee

(9) Minebea Co., Ltd.  
 (10) 4106-73 Oaza Miyota, Miyota-machi, Kitasaku-gun, Nagano-ken, Japan

(hereinafter designated as the Assignee) and Assignee's heirs, successors, assigns and legal representatives, the entire right, title and interest for the United States of America as defined in 35 U.S.C. § 100, in the invention, and in all applications for patent including any and all provisional, non-provisional, divisional, continuation, substitute, and reissue application(s), and all Letters Patent, extensions, reissues and reexamination certificates that may be granted on the invention known as

(11) Insert Identification,  
such as Title, Case Number  
or Foreign Application  
Number

(11) SPREAD ILLUMINATING APPARATUS  
 \_\_\_\_\_  
 (Attorney Docket No. \_\_\_\_\_)

for which the undersigned has (have) executed an application for patent in the United States of America on even date herewith or

(12) Insert Date of Signing of  
Application

(12) on January 24, 2001

(13) Alternative Identification  
for filed applications

(13) U.S. application Serial Number \_\_\_\_\_  
 filed \_\_\_\_\_

1) Each undersigned agrees to execute all papers necessary in connection with any application and any continuing, divisional or reissue applications for the invention, and any patent(s) issuing thereon, and also to execute separate assignments in connection with such applications and patents as the Assignee may deem necessary.

2) Each undersigned agrees to execute all papers necessary in connection with any interference which may be declared concerning any application or continuation or division thereof, or any patent or reissue application based thereon, for the invention, and to cooperate with the Assignee in every way possible in obtaining evidence and going forward with such interference.

3) Each undersigned agrees to execute all papers and documents and perform any act which may be necessary in connection with claims or provisions of the International Convention for Protection of Industrial Property or similar agreements.

4) Each undersigned agrees to perform all affirmative acts which may be necessary to obtain, maintain or confirm by reissue or reexamination a grant of a valid United States patent to the Assignee.

5) Each undersigned authorizes and requests the Commissioner of Patents to issue any and all Letters Patents of the United States resulting from said application(s) to the said Assignee, as Assignee of the entire interest, and covenants that he has full right to convey the entire interest herein assigned, and that he has not executed, and will not execute, any agreements in conflict herewith, and agrees that this assignment is binding on him and his heirs, successors, and assigns and legal representatives.

6) Each undersigned hereby grants the firm of OLIFF & BERRIDGE, PLC the power of insert on this assignment any further identification that may be necessary or desirable in order to comply with the rules of the United States Patent and Trademark Office for recordation of this document.

In witness whereof, executed by the undersigned on the date(s) opposite the undersigned name(s).

Date <u>January 24, 2001</u>	Inventor Signature <u>Shingo Suzuki</u>	(SEAL)
Date <u>January 24, 2001</u>	Inventor Signature <u>Koichi Toyoda</u>	(SEAL)
Date _____	Inventor Signature _____	(SEAL)
Date _____	Inventor Signature _____	(SEAL)
Date _____	Inventor Signature _____	(SEAL)
Date _____	Inventor Signature _____	(SEAL)
Date _____	Inventor Signature _____	(SEAL)
Date _____	Inventor Signature _____	(SEAL)
Date _____	Inventor Signature _____	(SEAL)
Date _____	Inventor Signature _____	(SEAL)
Date _____	Inventor Signature _____	(SEAL)

This assignment should preferably be signed before: (a) a Notary Public if within the U.S.A. (b) a U.S. Consul if outside the U.S.A. If neither, then it should be signed before at least two witnesses who also sign here:

Date _____	Witness _____	
Date _____	Witness _____	

**Inventor Information**

Inventor One Given Name:: Shingo  
Family Name:: SUZUKI  
Name Suffix::  
City of Residence:: Iwata-gun  
State or Prov. of Residence::  
Country of Residence:: JAPAN  
Inventor Two Given Name:: Koichi  
Family Name:: TOYODA  
Name Suffix::  
City of Residence:: Iwata-gun  
State or Prov. of Residence::  
Country of Residence:: JAPAN

**Correspondence Information**

Correspondence Customer Number:: 25944  
Name Line One:: Oliff & Berridge PLC  
Address Line One:: P.O. Box 19928  
City:: Alexandria  
State or Province:: VA  
Postal or Zip Code:: 22320  
Telephone:: (703) 836-6400  
Fax:: (703) 836-2787  
Electronic Mail:: commcenter@oliff.com

**Application Information**

Title Line One:: SPREAD ILLUMINATING APPARATUS  
Total Drawing Sheets:: 7  
Docket Number:: 108467

**Prior Foreign Applications**

Foreign Application One:: 2000-30541  
Filing Date:: February 8, 2000  
Country:: JAPAN  
Priority Claimed:: Yes

**NONPROVISIONAL PATENT APPLICATION****IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

**OLIFF & BERRIDGE, PLC**  
**P.O. Box 19928**  
**Alexandria, Virginia 22320**  
**Telephone: (703) 836-6400**  
**Facsimile: (703) 836-2787**

Attorney Docket No.: 108467

Date: January 26, 2001

**BOX PATENT APPLICATION**

Customer Number: 25944

**NONPROVISIONAL APPLICATION TRANSMITTAL  
RULE §1.53(b)**

Director of the U.S. Patent and Trademark Office  
 Washington, D.C. 20231

Sir:

Transmitted herewith for filing under 37 C.F.R. §1.53(b) is the nonprovisional patent application

For (Title): SPREAD ILLUMINATING APPARATUS

By (Inventors): Shingo SUZUKI and Koichi TOYODA

- ☒ Formal drawings (Figs. 1-7; 7 sheets) are attached.  
☒ A Declaration and Power of Attorney is filed herewith.  
☒ An assignment of the invention to MINEBEA CO., LTD. is filed herewith.  
☐ An Information Disclosure Statement is filed herewith.  
☐ Entitlement to small entity status is hereby asserted.  
☒ A Preliminary Amendment is filed herewith.  
☐ Please amend the specification by inserting before the first line the sentence --This nonprovisional application claims the benefit of U.S. Provisional Application No. \_\_\_\_\_, filed \_\_\_\_\_.--  
☒ Priority of foreign application No. 2000-30541 filed February 8, 2000 in Japan is claimed (35 U.S.C. §119).  
☐ A certified copy of the above corresponding foreign application(s) is filed herewith.  
☒ The filing fee is calculated below:

**CLAIMS IN THE APPLICATION AFTER ENTRY OF  
ANY PRELIMINARY AMENDMENT NOTED ABOVE**

FOR:	NO. FILED	NO. EXTRA
BASIC FEE		
TOTAL CLAIMS	7 - 20	= 0
INDEP CLAIMS	1 - 3	= 0
<input type="checkbox"/> MULTIPLE DEPENDENT CLAIMS PRESENTED		

\* If the difference is less than zero, enter "0".

**SMALL ENTITY**

RATE	FEE
	\$ 355
x 9 =	\$
x 40 =	\$
+ 135 =	\$
TOTAL	\$

OR

**OTHER THAN A  
SMALL ENTITY**

RATE	FEE
	\$ 710
x 18	\$
x 80	\$
+ 270	\$
TOTAL	\$ 710

OR

- ☒ Check No. 115788 in the amount of \$710.00 to cover the filing fee is attached. Except as otherwise noted herein, the Director is hereby authorized to charge any other fees that may be required to complete this filing, or to credit any overpayment, to Deposit Account No. 15-0461. Two duplicate copies of this sheet are attached.

Respectfully submitted,

James A. Oliff  
 Registration No. 27,075

Joel S. Armstrong  
 Registration No. 36,430

JAO:JSA/fpw

**PATENT APPLICATION**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Shingo SUZUKI and Koichi TOYODA

Application No.: New U.S. Application

Filed: January 26, 2001

Docket No.: 108467

For: SPREAD ILLUMINATING APPARATUS

**PRELIMINARY AMENDMENT**

Director of the U.S. Patent and Trademark Office  
Washington, D. C. 20231

Sir:

Prior to initial examination, please amend the above-identified application as follows:

**IN THE CLAIMS:**

Please replace claim 5 as follows:

5. (Amended) The spread illuminating apparatus as claimed in claim 1, wherein said light guiding member is provided with a means for increasing reflection which improves light reflectance.

Please add new claims 6 and 7 as follows:

-- 6. The spread illuminating apparatus as claimed in claim 2, wherein said light guiding member is provided with a means for increasing reflection which improves light reflectance.--

-- 7. The spread illuminating apparatus as claimed in claim 3, wherein said light guiding member is provided with a means for increasing reflection which improves light reflectance.--

REMARKS

Claims 1-7 are pending. Claim 5 has been amended herein to eliminate multiple dependencies.

The attached Appendix includes marked up copies of each rewritten claim (37 C.F.R. 1.121(c)(ii).

Respectfully submitted,

James A. Oliff  
Registration No. 27,075

Joel S. Armstrong  
Registration No. 36,430

JAO:JSA/fpw

Date: January 26, 2001

**OLIFF & BERRIDGE, PLC**  
**P.O. Box 19928**  
**Alexandria, Virginia 22320**  
**Telephone: (703) 836-6400**

<p>DEPOSIT ACCOUNT USE AUTHORIZATION Please grant any extension necessary for entry; Charge any fee due to our Deposit Account No. 15-0461</p>
--------------------------------------------------------------------------------------------------------------------------------------------------------------------

## APPENDIX

### Changes to Claims:

The following is a marked-up version of the amended claim:

Claims 6 and 7 are added.

5. The spread illuminating apparatus as claimed in ~~any one of claims 1 to 3~~, wherein said light guiding member is provided with a means for increasing reflection which improves light reflectance.



# APPLICATION FOR UNITED STATES PATENT DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name; that

I verily believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural inventors are named below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

SPREAD ILLUMINATING APPARATUS

described and claimed in the specification:

Check one

\*a. ☒ attached hereto.

b. ☐ filed on \_\_\_\_\_ as Application No. \_\_\_\_\_ and amended on \_\_\_\_\_  
(if applicable)

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose to the Office all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, §1.56. Under Title 35, U.S. Code §119, the priority benefits of the following foreign application(s) and/or United States provisional application(s) filed within one year prior to this application are hereby claimed:

Japanese Patent Application No. 2000-30541 filed on February 8, 2000

The following application(s) for patent or inventor's certificate on this invention were filed in countries foreign to the United States of America either (a) more than one year prior to this application, or (b) before the filing date of the above-named foreign priority application(s) and/or United States provisional application(s):

I hereby appoint the following as my attorneys of record with full power of substitution and revocation to prosecute this application and to transact all business in the Patent Office:

James A. Oliff, Reg.No.27,075; William P. Berridge, Reg.No.30,024; Kirk M. Hudson, Reg.No.27,562;

Thomas J. Pardini, Reg.No.30,411; and Edward P. Walker, Reg.No.31,450.

ALL CORRESPONDENCE IN CONNECTION WITH THIS APPLICATION SHOULD BE SENT TO OLIFF & BERRIDGE, P.O. BOX 19928, ALEXANDRIA, VIRGINIA, 22320, TELEPHONE (703) 836-6400.

I hereby declare that I have reviewed and understand the contents of this Declaration, and that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Typewritten Full Name  
of Sole or First Inventor

Shingo

SUZUKI

Given Name

Middle Initial

Family Name

\*\*Inventor's Signature

Shingo Suzuki

\*\* Date of Signature

January

24

2001

Month

Day

Year

Residence

Iwata-gun

Shizuoka-ken

Japan

City

State of Province

Country

Citizenship

Japanese

Post Office Address

c/o Minebea Co., Ltd. Hamamatsu Manufacturing Unit, 1743-1 Asana, Asana-cho.

(Insert complete mailing

Iwata-gun, Shizuoka-ken, Japan

address, including country)

\*This form may be executed only when attached to the specification (including claims) at the end thereof if Box a. is checked.

\*\*Note to Inventor: Please sign name exactly as it appears above and insert actual date of signing.

IF THERE IS MORE THAN ONE INVENTOR USE PAGE 2 AND PLACE AN "X" HERE ☒

**-PAGE 2 OF U.S.A. DECLARATION FORM**  
(Discard this page in a sole inventor application)

Typewritten Full Name  
of Second Joint

Inventor (if any) Koichi TOYODA  
Given Name Middle Initial Family Name

\*\*Inventor's Signature Koichi Toyoda

\*Date of Signature January 24 2001  
Month Day Year

Residence Iwata-gun Shizuoka-ken Japan  
City State or Province Country

Citizenship Japanese

Post Office Address c/o Minebea Co., Ltd. Hamamatsu Manufacturing Unit, 1743-1 Asana, Asaba-cho,  
(Insert completing mailing Iwata-gun, Shizuoka-ken, Japan  
address, including country)

Typewritten Full Name  
of Third Joint

Inventor (if any) \_\_\_\_\_  
Given Name Middle Initial Family Name

\*\*Inventor's Signature \_\_\_\_\_

\*Date of Signature \_\_\_\_\_  
Month Day Year

Residence \_\_\_\_\_  
City State or Province Country

Citizenship \_\_\_\_\_

Post Office Address \_\_\_\_\_  
(Insert completing mailing \_\_\_\_\_  
address, including country)

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of Fourth Joint

Inventor (if any) \_\_\_\_\_  
Given Name Middle Initial Family Name

\*\*Inventor's Signature \_\_\_\_\_

\*Date of Signature \_\_\_\_\_  
Month Day Year

Residence \_\_\_\_\_  
City State or Province Country

Citizenship \_\_\_\_\_

Post Office Address \_\_\_\_\_  
(Insert completing mailing \_\_\_\_\_  
address, including country)

Typewritten Full Name  
of Fifth Joint

Inventor (if any) \_\_\_\_\_  
Given Name Middle Initial Family Name

\*\*Inventor's Signature \_\_\_\_\_

\*Date of Signature \_\_\_\_\_  
Month Day Year

Residence \_\_\_\_\_  
City State or Province Country

Citizenship \_\_\_\_\_

Post Office Address \_\_\_\_\_  
(Insert completing mailing \_\_\_\_\_  
address, including country)

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**This form may be executed only when attached to the first page of the Declaration and Power of attorney form of the application to which it pertains.**

# APPLICATION FOR UNITED STATES PATENT DECLARATION AND POWER OF ATTORNEY

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My residence, post office address and citizenship are as stated below next to my name; that

I verily believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural inventors are named below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

SPREAD ILLUMINATING APPARATUS

described and claimed in the specification:

Check one

\*a. ☒ attached hereto.

b. ☐ filed on \_\_\_\_\_ as Application No. \_\_\_\_\_ and amended on \_\_\_\_\_ (if applicable)

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

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Typewritten Full Name

of Sole or First Inventor	<u>Shingo</u>	<u>SUZUKI</u>
	Given Name	Family Name
**Inventor's Signature	<u>Shingo Suzuki</u>	
** Date of Signature	<u>January</u>	<u>2001</u>
	Month	Year
Residence	<u>Iwata-gun</u>	<u>Shizuoka-ken</u>
	City	State of Province
Citizenship	<u>Japanese</u>	<u>Japan</u>
		Country
Post Office Address	<u>c/o Minebea Co., Ltd. Hamamatsu Manufacturing Unit, 1743-1 Asana, Asaba-cho,</u>	
(Insert complete mailing address, including country)	<u>Iwata-gun, Shizuoka-ken, Japan</u>	

\*This form may be executed only when attached to the specification (including claims) at the end thereof if Box a. is checked.

\*\*Note to Inventor: Please sign name exactly as it appears above and insert actual date of signing.

IF THERE IS MORE THAN ONE INVENTOR USE PAGE 2 AND PLACE AN "X" HERE ☒

Director of the U.S. Patent  
and Trademark Office  
Box Assignments  
Washington, D.C. 20231

RECORDATION FORM COVER SHEET  
PATENTS ONLY

U.S. DEPARTMENT OF COMMERCE  
Patent and Trademark Office

Attorney Docket No. 108467

To the Director of the U.S. Patent and Trademark Office: Please record the attached original document or copy thereof.

1. A. Name of conveying party(ies):  
Shingo SUZUKI  
Koichi TOYODA

B. Additional name(s) of conveying party(ies) attached?  
☐ Yes ☒ No

2. A. Name and address of receiving party(ies):  
MINEBEA CO., LTD.  
4106-73 OAZA MIYOTA,  
MIYOTA-MACHI, KITASAKU-GUN,  
NAGANO-KEN, JAPAN

B. Additional name(s) & address(es) attached?  
☐ Yes ☒ No

3. A. Nature of conveyance:

☒ Assignment ☐ Merger  
☐ Security Agreement ☐ Change of Name  
☐ Other \_\_\_\_\_

B. Execution Date: January 24, 2001

4. A. If this document is being filed together with a new application, the execution date of the application is: January 24, 2001

B. Patent Application No.(s) \_\_\_\_\_

C. Patent No.(s) \_\_\_\_\_

Additional numbers attached? ☐ Yes ☒ No

5. Name and address of party to whom correspondence concerning document should be mailed:

Name: James A. Oliff

Address: **OLIFF & BERRIDGE, PLC**  
P.O. Box 19928  
Alexandria, VA 22320

6. Total number of applications and patents involved: 1

7. A. Total fee (37 CFR 3.41).....\$ 40.00

B. Enclosed (Check No. 115787)

8. Credit any overpayment or charge any underpayment to deposit account number 15-0461.

9. Statement and signature.

*To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy of the original document.*

James A. Oliff, Registration No. 27,075  
Joel S. Armstrong, Registration No. 36,430

Date: January 26, 2001

Total number of pages including cover sheet, attachments, and document: 2

**-PAGE 2 OF U.S.A. DECLARATION FORM**  
(Discard this page in a sole inventor application)

Typewritten Full Name  
of Second Joint

Inventor (if any) Koichi TOYODA  
Given Name Middle Initial Family Name  
\*\*Inventor's Signature Koichi Toyoda  
\*Date of Signature January 24 2001  
Month Day Year  
Residence Iwata-gun Shizuoka-ken Japan  
City State or Province Country  
Citizenship Japanese  
Post Office Address c/o Minebea Co., Ltd. Hamamatsu Manufacturing Unit, 1743-1 Asana, Asaba-cho,  
(Insert completing mailing Iwata-gun, Shizuoka-ken, Japan  
address, including country)

Typewritten Full Name  
of Third Joint

Inventor (if any) \_\_\_\_\_  
Given Name Middle Initial Family Name  
\*\*Inventor's Signature \_\_\_\_\_  
\*Date of Signature \_\_\_\_\_  
Month Day Year  
Residence \_\_\_\_\_  
City State or Province Country  
Citizenship \_\_\_\_\_  
Post Office Address \_\_\_\_\_  
(Insert completing mailing \_\_\_\_\_  
address, including country)

Typewritten Full Name  
of Fourth Joint

Inventor (if any) \_\_\_\_\_  
Given Name Middle Initial Family Name  
\*\*Inventor's Signature \_\_\_\_\_  
\*Date of Signature \_\_\_\_\_  
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Residence \_\_\_\_\_  
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Typewritten Full Name  
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\*\*Inventor's Signature \_\_\_\_\_  
\*Date of Signature \_\_\_\_\_  
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# ASSIGNMENT

(1-8) Insert Name(s)  
of Inventor(s)

(1) Shingo SUZUKI \_\_\_\_\_ (7) \_\_\_\_\_  
 (2) Koichi TOYODA \_\_\_\_\_ (8) \_\_\_\_\_  
 (3) \_\_\_\_\_ (9) \_\_\_\_\_  
 (4) \_\_\_\_\_ (10) \_\_\_\_\_  
 (5) \_\_\_\_\_ (11) \_\_\_\_\_ and  
 (6) \_\_\_\_\_ (12) \_\_\_\_\_

In consideration of the sum of one dollar (\$1.00) and other good and valuable consideration paid to each of the undersigned, each undersigned agrees to assign, and hereby does assign, transfer and set over to

(9) Insert Name of Assignee

(9) Minebea Co., Ltd.

(10) Insert Address of  
Assignee

(10) 4106-73 Oaza Miyota, Miyota-machi, Kitasaku-gun, Nagano-ken, Japan

(hereinafter designated as the Assignee) and Assignee's heirs, successors, assigns and legal representatives, the entire right, title and interest for the United States of America as defined in 35 U.S.C. § 100, in the invention, and in all applications for patent including any and all provisional, non-provisional, divisional, continuation, substitute, and reissue application(s), and all Letters Patent, extensions, reissues and reexamination certificates that may be granted on the invention known as

(11) Insert Identification,  
such as Title, Case Number  
or Foreign Application  
Number

(11) SPREAD ILLUMINATING APPARATUS

(Attorney Docket No. \_\_\_\_\_)

for which the undersigned has (have) executed an application for patent in the United States of America on even date herewith or

(12) Insert Date of Signing of  
Application

(12) on January 24, 2001

(13) Alternative Identification  
for filed applications

(13) U.S. application Serial Number \_\_\_\_\_  
filed \_\_\_\_\_

1) Each undersigned agrees to execute all papers necessary in connection with any application and any continuing, divisional or reissue applications for the invention, and any patent(s) issuing thereon, and also to execute separate assignments in connection with such applications and patents as the Assignee may deem necessary.

2) Each undersigned agrees to execute all papers necessary in connection with any interference which may be declared concerning any application or continuation or division thereof, or any patent or reissue application based thereon, for the invention, and to cooperate with the Assignee in every way possible in obtaining evidence and going forward with such interference.

3) Each undersigned agrees to execute all papers and documents and perform any act which may be necessary in connection with claims or provisions of the International Convention for Protection of Industrial Property or similar agreements.

4) Each undersigned agrees to perform all affirmative acts which may be necessary to obtain, maintain or confirm by reissue or reexamination a grant of a valid United States patent to the Assignee.

5) Each undersigned authorizes and requests the Commissioner of Patents to issue any and all Letters Patents of the United States resulting from said application(s) to the said Assignee, as Assignee of the entire interest, and covenants that he has full right to convey the entire interest herein assigned, and that he has not executed, and will not execute, any agreements in conflict herewith, and agrees that this assignment is binding on him and his heirs, successors, and assigns and legal representatives.

6) Each undersigned hereby grants the firm of OLIFF & BERRIDGE, PLC the power of insert on this assignment any further identification that may be necessary or desirable in order to comply with the rules of the United States Patent and Trademark Office for recordation of this document.

In witness whereof, executed by the undersigned on the date(s) opposite the undersigned name(s).

Date <u>January 24, 2001</u>	Inventor Signature	<u>Shingo Suzuki</u>	(SEAL)
Date <u>January 24, 2001</u>	Inventor Signature	<u>Koichi Toyoda</u>	(SEAL)
Date _____	Inventor Signature	_____	(SEAL)
Date _____	Inventor Signature	_____	(SEAL)
Date _____	Inventor Signature	_____	(SEAL)
Date _____	Inventor Signature	_____	(SEAL)
Date _____	Inventor Signature	_____	(SEAL)
Date _____	Inventor Signature	_____	(SEAL)
Date _____	Inventor Signature	_____	(SEAL)
Date _____	Inventor Signature	_____	(SEAL)

This assignment should preferably be signed before: (a) a Notary Public if within the U.S.A. (b) a U.S. Consul if outside the U.S.A. If neither, then it should be signed before at least two witnesses who also sign here:

Date \_\_\_\_\_ Witness \_\_\_\_\_  
 Date \_\_\_\_\_ Witness \_\_\_\_\_